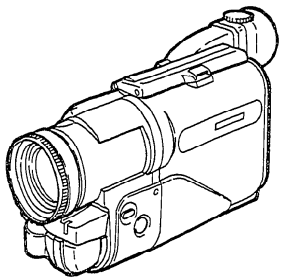
HITACHI

SERVICE MANUAL
Wartungsanleitung



Hi 8

TK | No.6501E

VM-H80E
VM-H81E

SH MECHANISM

Manuals related to the VM-H80E/H81E

This model uses an SH MECHANISM.
Refer to the following manual for the SH MECHANISM.

Name of manual	Manual No.
SH MECHANISM	6404E, G, F
VM-ACL1E	6502E, G, F
VM-IR80E	6503E, G, F

Indication of differences between models:
Parts indicated as "TYPE-80" are exclusively used for the VM-H80E and those indicated as "TYPE-81" are exclusively for the VM-H81E.
Parts indicated as "TYPE-80' 81' " are exclusively used for the VM-H80E(SW) / H81E(SW).

Die Modell VM-H80E/H81E betreffende Anleitungen:

Dieses Modell ist mit einem SH-BANDLAUFWERK ausgestattet.
Für das SH-BANDLAUFWERK ist die folgende Anleitung zu beachten.

Bezeichnung der Anleitung	Anleitungs-Nr.
SH-BANDLAUFWERK	6404E, G, F
VM-ACL1E	6502E, G, F
VM-IR80E	6503E, G, F

Kennzeichnung der Unterschiede zwischen den Modellen:
Die mit "TYPE-80" gekennzeichneten Teile werden nur für das Modell VM-H80E verwendet, und die mit "TYPE-81" gekennzeichneten Teile werden nur für das Modell VM-H81E verwendet.
Die mit "TYPE-80' 81' " gekennzeichneten Teile werden nur für die Modelle VM-H80E(SW) / H81E(SW) verwendet.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

Änderungen der Technischen Daten und Teile im Sinne ständiger Verbesserung vorbehalten.

8mm VIDEO CAMERA/RECORDER

8-mm-Video-Kamerarecorder

January 1995 Video & Personal Media Systems Division, Tokai Operation

ENGLISH

CONTENTS

CHAPTER 1

COMPARISON OF FEATURES E1-1
COMPARISON OF MAIN CONTROL ICs E1-2
SERVICE MANUAL ABBREVIATION LIST E1-3
WHEN USING THIS SERVICE REFERENCE MATERIAL E1-5
LEADLESS (CHIP) COMPONENT IDENTIFICATION ... E1-6
BLOWN FUSE CHECK/FUSE REPLACEMENT PROCEDURE E1-9
JIGS AND TAPES FOR ADJUSTMENT E1-10
HOW TO USE THE EXTENSION CABLE E1-11
MAINTENANCE/INSPECTION PROCEDURE E1-12

CHAPTER 2

DISASSEMBLY
1. MAINTENANCE OF WATER-RESISTANT PACKING E2-1
2. IDENTIFICATIONS AND LOCATIONS OF CIRCUIT BOARDS E2-2
3. BEFORE STARTING DISASSEMBLY E2-2
4. COMPONENTS REMOVAL E2-3
  1. Front Case Block, Main Cover E2-4
  2. Camera, Mechanism and Main Blocks E2-5
  3. Disassembly of Front Case Blocks E2-6
  4. Disassembly of Camera Blocks E2-7
  5. Disassembly of Lens Blocks E2-7
  6. Disassembly of Mechanism Blocks E2-8
  7. Disassembly of Main Block (Left Side) E2-9
  8. Disassembly of Main Block (Right Side) E2-10
  9. Disassembly of EVF Block E2-10
5. WIRE LAYOUT DIAGRAM E2-11

CHAPTER 3

ELECTRICAL ADJUSTMENT
1. CONNECTION FOR ADJUSTMENT E3-1
2. CAMERA SECTION ADJUSTMENT E3-2
  1. CIRCUIT BOARD LOCATIONS E3-2
  2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT E3-2
  3. ADJUSTMENT CONDITION E3-2
  4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT E3-2
  5. LIST OF CHARTS FOR CAMERA ADJUSTMENT .. E3-2
  6. CHEK AFTER REPLACING MAJOR COMPONENT IN THE CAMERA SECTION E3-3
  7. CAMERA SECTION ADJUSTMENT PROCEDURE ... E3-3
  7-1. Connections for Adjustment E3-4
  7-2. How to Start the MAP E3-4
  7-3. Initial Setting by Model E3-5
  7-4. Electric Volume Adjustment Procedure E3-6
  7-5. Digital Adjustment Procedure E3-9
  7-6. Autofocus Adjustment Procedure E3-15
  7-7. Stabilizer Adjustment Procedure E3-17
  7-8. Spot Noise Adjustment Procedure E3-18
  8. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT PROCEDURE E3-20
  8-1. CRT EVF Adjustment E3-20
    (1) Deflection Yoke Position Adjustment E3-20
    (2) EVF Centering Adjustment E3-20
    (3) EVF Vertical Size Adjustment E3-20
    (4) EVF Brightness Adjustment E3-20
    (5) EVF Focus Adjustment E3-20
  8-2. LCD EVF Adjustment E3-21
    (1) H. Drive Frequency Adjustment E3-21
    (2) Clip, Brightness, Contrast Adjustment E3-21
    (3) Sub-Bright Adjustment E3-22
    (4) Chroma Gain and Colour Phase Adjustment E3-22
  8-3. STA EVF Adjustment E3-23
    (1) Output Voltage Adjustment E3-23
3. VCR SECTION ADJUSTMENT E3-24
  1. CIRCUIT BOARD LOCATIONS E3-24
  2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT E3-24
  3. ADJUSTMENT CONDITION E3-24
  4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT E3-24
  5. ADJUSTMENT COMPONENTS LOCATIONS E3-25
  6. CHECK AFTER REPLACING MAJOR COMPONENTS IN THE VCR SECTION E3-27
  7. SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT E3-27
  (1) Power Shut offf Level (ODC : Over Discharge) Adjustment ... E3-28
  (2) Head Switching Point Adjustment E3-28
  8. LUMINANCE/CHROMA CIRCUIT ADJUSTMENT ... E3-29
  (1) Comb Filter Adjustment E3-29
  (2) E-E Video Signal Level Adjustment ... E3-29
  (3) White Clip Adjustment E3-29
  (4) Carrier Frequency Adjustment E3-30
  (5) Deviation Adjustment E3-30
  (6) Record Luminance/Chroma Level Adjustment E3-31
  (7) Playback Luminance Level Adjustment E3-31
  (8) Colour Alignment Adjustment E3-32
  9. AUDIO CIRCUIT ADJUSTMENT E3-33
  (1) Band Pass Filter (BPF) Adjustment ... E3-33
  (2) Deviation Adjustment E3-33
  10. TIO CIRCUIT ADJUSTMENT E3-34
  1. FM Carrier Adjustment E3-35
4. ERROR MESSAGES E3-36
5. TROUBLESHOOTING OF AUTOFOCUS E3-39

CHAPTER 4

1. BLOCK DIAGRAM
  1. OVERALL 4-1
  2. CAMERA 4-3
  3. POWER 4-5
  4. SYSTEM CONTROL 4-7
  5. SERVO 4-9
  6. VIDEO 4-11
  7. AUDIO 4-13
2. MICROPROCESSOR PIN FUNCTION TABLES 4-15

CHAPTER 5

SCHEMATIC & CIRCUIT BOARD DIAGRAM
  INTERNAL WIRING DIAGRAM 5-1

	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
SENSOR/GYRO (SPE)	5-3 /	5-51
SENSOR DRIVE (MAN)	5-5 /	5-43
PROCESS (MAN)	5-7 /	5-43
DIGITAL PROCESS (MAN)	5-9 /	5-43
AUTO FOCUS (MAN)	5-11/	5-43
TROUBLE SENSOR (MAN)	5-14/	5-43
SYSTEM CONTROL (MAN)	5-15/	5-43
JACK (MAN)	5-17/	5-43
TALLY/IR/OPTICAL (TIO)	5-18/	5-56
SERVO (MAN)	5-19/	5-43
MOTOR DRIVE (MAN)	5-22/	5-43
PRE AMP (MAN)	5-23/	5-43
SKEW COMPE (MAN)	5-26/	5-43
CCD DELAY (MAN)	5-27/	5-43
LUMINANCE/CHROMA (MAN)	5-29/	5-43
AUDIO (MAN)	5-31/	5-43
DC-DC CONVERTER (MAN)	5-33/	5-43
STATION (STA)	5-35/	5-55
MIC AMP (STA)	5-37/	5-55
LCD DRIVE 1, 2 (CRD)	5-39/	5-52
ELECTRONIC VIEWFINDER (EVF)	5-41/	5-42

WAVEFORMS
  CAMERA SECTION 5-13
  SERVO 5-21
  PRE AMP 5-25
  VIDEO 5-28
  ELECTRONIC VIEWFINDER 5-41
  LCD DRIVE 5-41

CHAPTER 6

EXPLODED VIEWS

CABINET SECTION (I) 6-1
CABINET SECTION (II) 6-2
SUB CHASSIS SECTION 6-3
MAIN CHASSIS SECTION 6-4
CAMERA BLOCK SECTION 6-5
ELECTRONIC VIEWFINDER (LCD EVF) SECTION ... 6-6
ELECTRONIC VIEWFINDER (CRT EVF) SECTION ... 6-7

CHAPTER 7

REPLACEMENT PARTS LIST 7-1

CHAPTER 8

1. HOW TO CHECK USING THE SELF-DIAGNOSIS FUNCTION E8-1
  1. Self-Diagnosis Functions E8-1
  2. A Mode (Occasional Defect Self-Diagnosis Function) E8-2
  3. B Mode (Mechanical Block Self-Diagnosis Function) E8-4
2. OPERATION
  CONTROLS AND FUNCTIIONS E8-7
  WATER-RESISTANT E8-8
  CHECKING THE BATTERY PACK E8-10
  AV OPTICAL LINK E8-11
  MAINTENANCE AND STORAGE AFTER USE E8-12
  TROUBLESHOOTING E8-13

ENGLISH

SPECIFICATIONS

General

Power requirements	7.2V DC
Power consumption	VM-H80E: 5.5 watts (when recording) VM-H81E: 5.8 watts (when recording)
Operating temperature	0°C to 40°C
Operating humidity	< 80%
Storage temperature	– 20°C to 50°C
Dimensions	VM-H80E: 88(W) x 109(H) x 244(D) mm VM-H81E: 88(W) x 109(H) x 228(D) mm
Weight	VM-H80E: Approx. 910 g (without battery pack, lens hood, lens cap and cassette) VM-H81E: Approx. 900 g (without battery pack, lens hood, lens cap and cassette)

Video Recorder Section

Format	8mm
Record/playback system	Four video record/playback heads
Video signal	PAL colour & CCIR monochrome signals 625 lines
Tape speed	SP: 20.05 mm/sec.
Video output	1.0 Vp-p, 75 ohm
Audio output	– 8 dBs, less than 1 kohm
Mic input	0.3mV (–68dBs), high impedance
Fast forward/rewind time	Less than 10 minutes with P5-90 cassette

Camera Section

Scanning	625 lines/50 fields/25 frames
Required minimum illumination	4 lux
Camera device	1/3" C.C.D
Lens diameter	46 mm

CAUTION

Lithium battery; danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacuturer's instructions.

CAUTION (COLOUR LCD EVF)

LCD display; the liquid crystal display (LCD) panel is mode by highly precise technology. More than 99.99% of its picture elements (pixels) are effective, but some (less than 0.01%) may appear as coloured bright dots. This does not indicate a fault as the LCD panel stretches the limits of current technology.

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers'. Critical parts are marked with ⚠ in the schematic diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without any danger of electrical shock.

COMPARISON OF FEATURES

	ITEM	VM-H80E	VM-H81E	VM-H59E
GENERAL	POWER REQUIREMENTS	7.2V DC		6V DC
	POWER CONSUMPTION	5.5Watts (when recording)	5.8Watts (when recording)	6.2Watts (when recording)
	DIMENSIONS (W×H×D mm)	88×109×244	88×109×228	94×114×214
	WEIGHT (gr)	Approx. 910	Approx. 900	Approx. 760
	OPERATION TEMPERATURE/HUMIDITY	0℃ TO 40℃ / <80%		0℃ TO 40℃ / <80%
	STORAGE TEMPERATURE	-20℃ TO 50℃		-20℃ TO 50℃
VIDEO	FORMAT	8mm (Hi-8)		8mm (Hi-8)
	RECORD/PLAYBACK SYSTEM	4 HEADS + Flying Erase HEAD		2 HEADS + Flying Erase HEAD
	TAPE SPEED	SP : 20.05mm/sec		SP : 20.05mm/sec
	F.F/REW TIME	Less than 8minutes With P5-90 cassette		Less than 8minutes With P5-90 cassette
	HEAD WEEL	26.7mm		40mm
	BASIC CHASSIS TYPE	SH MECHANISM		TH MECHANISM
	AUTO HEAD CLEANING	YES		NO
CAMERA	REQUIRED MINIMUM ILLUMINATION	4 lux		3 lux
	CAMERA DEVICE	1/3" C.C.D		1/3" C.C.D
	LENS DIAMETER	46mm		46mm
	ZOOM RATIO/APERTURE	12 : 1 (5mm - 60mm) / f1.8		12 : 1 (5mm - 60mm) / f1.8
	ZOOM SPEED	2 SPEED		1 SPEED
OTHER FEATURES	ELECTRONIC VIEWFINDER	CRT (Black&White)	LCD (Color)	LCD (Color)
	ELECTRONIC IMAGE STABILIZER	YES		YES
	AI AUTO WHITE BALANCE	YES		YES
	DIGITAL SIGNAL PROCESSOR	YES		YES
	ELECTRICAL ZOOM	×36 (24 × INST.ZOOM1.5)		×36 (24 × INST.ZOOM1.5)
	INSTANT (INST.) ZOOM	YES (×1.5)		YES (×1.5)
	AUTOFOCUS SYSTEM	VIDEO AF		VIDEO AF
	PROGRAMME AE (SHUTTER SPEED)	YES (Programme AE only)		YES (Programme AE only)
	TITLER	YES (2 LINE)		YES (2 LINE)
	S-CONNECTOR INPUT/OUTPUT	OUTPUT only (AV OUTPUT CABLE)		OUTPUT only (AV OUTPUT CABLE)
	CAMERA LIGHT SHOE	NO		YES
	MICROPHONE	STEREO		STEREO
	MIC/EDIT IN JACK	YES		NO
	FADE	YES		YES
	MANUAL/AUTO FOCUS	SELECTIVE		SELECTIVE
	OPTICAL CONNECTION	YES		NO
ACCESSORIES	AC ADAPTER/CHARGER	VM-ACL1E		VM-AC83E
	BATTERY PACK	VM-NP500H		VM-BP82G
	REMOTE CONTROL	VM-RME55A		VM-RME55A
	EASY EDIT REMOTE CONTROL	VM-RM70EDE		NO
	AV OPTICAL WIRELESS RECEIVER	VM-IR80E		NO

COMPARISON OF MAIN CONTROL ICs

ITEM	VM-H80E/H81E		VM-H59E	
SENSOR/GYRO				
CCD SENSOR	ICX059AK	(IC1001)	ICX058AK	(IC1001)
GYRO(VERT.)	ENC-05DA-01	(IC1402)	ENC-05DA-01	(IC1411)
RESET(VERT.)	TC4W66F	(IC1403)	TC4W66F	(IC1404)
V.GYRO AMP	XRA4510F	(IC1404)	XRA4510F	(IC1402)
GYRO(HORIZ.)	ENC-05DB-01	(IC1405)	ENC-05DB-01	(IC1511)
RESET(HORIZ.)	TC4W66F	(IC1406)	TC4W66F	(IC1504)
H.GYRO AMP	XRA4510F	(IC1407)	XRA4510F	(IC1502)
SENSOR DRIVE				
CDS/AGC	HA118184F	(IC1101)	HA118184F	(IC1101)
A/D CONV.	HD49319A	(IC1102)	HD49319F	(IC1102)
DIGITAL PROCESS	HG51B025TF	(IC1103)	HG51B025TF	(IC1103)
DIGITAL ZOOM	HG51B139FG1	(IC1104)	HG51B139FG1	(IC1104)
DRIVE PULSE GEN.	μPD16508GB	(IC1105)	μPD16508GB	(IC1110)
D-μP	HD6433378V05/V12	(IC1106)	HD6433378V11F	(IC1105)
EEP-ROM	S2939GIF	(IC1107)	S2939GIF10G	(IC1106)
AUTO FOCUS				
IRIS DRIVE	NJM3414M	(IC1201)	NJM3414M	(IC1201)
IRIS MOTOR	NJM3403A	(IC1202)	NJM3403A	(IC1202)
GAIN SW	TC4W66F	(IC1203)	TC4W66F	(IC1203)
AUTO FOCUS μP	SC78054GC017/021	(IC1301)	SC78054GC017/021	(IC1301)
ZOOM MOTOR DRIVE	MPC17A85VM	(IC1302)	XPC17A85ZVM	(IC1302)
FOCUS MOTOR DRIVE	MPC17A85VM	(IC1303)	XPC17A85ZVM	(IC1303)
INV.	SN74HCT04ADB	(IC1308)	SN74HCT04ADB	(IC1308)
BUF.	HD74HCT125T	(IC1311)	HD74HCT125T	(IC1311)
SYSTEM CONTROL				
SYSTEM CONTROL μP	HD6433724B84H	(IC0901)	CXP80724	(IC0901)
LOADING MOTOR DRIVE	BA6417F	(IC0902)	BA6417F	(IC0603)
RESET PULSE GEN.	S84206F	(IC0903)	S84206F	(IC0902)
CHARA. GEN.	XLU5949AFS	(IC0904)	XLU5949AFS	(IC0904)
LEVEL SHIFT	HD74HCT125	(IC0905)	HD74HCT125	(IC0903)
SERVO				
SERVO CONTROL	HD49782	(IC0601)	CXP80724	(IC0901)
ATF	XR10823CQ	(IC0602)	XR10823CQ	(IC0601)
CAPST.MOTOR DRIVE	LB1881V	(IC0603	LB1881	
CYL.MOTOR DRIVE	LB1885MA	(IC0604)	LB1885MA	(IC0602)
AMP	NJM2902V	(IC0605)		
AUDIO/MIC AMP				
AUDIO PROCESS	HA118176F	(IC0401)	HA118176F	(IC0401)
MIC AMP	LA7471M	(IC0451)	LA7471M	(IC0402)
MIC SWITCH	NJM4066B	(IC0453)		
DC-DC CONVERTER				
PWM	TL14641PT	(IC0501)	TL1464	(IC0551)
PRE AMP				
HEAD SW	HA118167	(IC0101)	HA118189MPER	(IC0101)
FM EQ	M52357VP	(IC0102)		
LUMINANCE/CHROMA				
LUMA/CHROMA PROCESS	HA118192F	(IC0201)	HA118192F	(IC0201)
CCD 1H DELAY	CXL5502N	(IC0202)	CXL5502N	(IC0202)
CCD 1H DELAY(DROP OUT)	CXL5507M	(IC0203)	CXL5507M	(IC0203)
VIDEO AMP	MM1024AFF	(IC0204)	MM1029AT	(IC0204)
OUTPUT SELECT	NJM2235V	(IC0205)	NJM2249M	(IC0205)
INPUT SELECT	NJM2249M	(IC0206)	NJM2249M	(IC0207)
STATION				
CHARGE CONT.	UPC358G	(IC0051)		
EVF				
BACK LIGHT PULSE GEN.	BA226F	(IC2101)		
VIDEO PROCESS	CXA1785R	(IC2201)	IR3V05	(IC2101)
PULSE GEN.	CXD2403R	(IC2202)	ETM3030T0A	(IC2202)
EVF PWM	FA761ON	(IC2801)	FA761ON	(IC2181)

SERVICE MANUAL ABBREVIATION LIST

A	
ACC	Automatic Color Control
ACK	Automatic Color Killer
ADC B-Y	Analog to Digital Converted B-Y Signal
ADC R-Y	Analog to Digital Converted R-Y Signal
ADC Y	Analog to Digital Converted Luminance
ADD	Adder
ADRS	Address
A.DUB	Audio Dubbing
AF	Autofocus
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
AGC KILLER	AGC Killer Voltage
ALC	Automatic Level Control
AIC	Automatic Iris Control
AM	Amplitude Modulation
AMP	Amplifier
APC	Automatic Phase Control
ASBL	Assemble (Phase Matching)
AUD.	Audio
AUX	Auxiliary
A5V	Always 5V B+ Source
B	
B (BLU)	Color Signal BLUE
BATT.	Battery
BF	Burst Flag
BG	Burst Gate or Back Ground
BGP	Burst Gate Pulse
BH	Power Supply for Selecting VHF High Band
BL	Power Supply for Selecting VHF Low Band
BLK	Blanking
BM	Power Supply for Selecting VHF Mid Band
BPF	Bandpass Filter
BS	Power Supply for Selecting VHF Super Band
BU	Power Supply for Selecting UHF Band
BU	Back-up
BUF.	Buffer Amplifier
B-YL	Battery
C	
C	Chroma
C (CHROMA)	Chrominance Signal
CAPST.	Capstan
CAS	Column Address Strobe
CARRI.	Carrier
CATV	Cable TV
C.BLANK	Chroma Blanking
C.BLK	Composite Blanking
CCD	Charge Coupled Device
CG	Character Generator
C.FG/CFG	Capstan Frequency Generater
C.FREE RUN	Chapstan Free Run
CH	Channel
CHD	Camera Horizontal Drive Pulse
CHAR.	Character
CHROMA	Chrominance
C.MEMORY	Counter Memory
CNR	Chroma Noise Reducer
COM.	Common
COM.	Composite
COMPA	Comparator
COMPE	Compensator
COMPO	Composite
COMP-EXP	Compressor-Expander
CONV.	Converter
CONT	Control
CORR.	Correlation
COUNT.	Counter
CP	Clamp Pulse
C.PAUSE	Camera Pause
C/R	Capacitor/Resistor
C.RESET	Counter Reset
C.REVERSE	Count Reverse
CST	Cassette

C	
C.SYNC	Composite Synchronizing Signal
CTL	Control Track Pulse (Control)
CYL	Cylinder
CY (CYAN)	Color Signal CYAN
D	
DA	Double Azimuth
D/A	Digital to Analog Converter
D-D	Direct Drive
DEEMPHA.	Deemphasis
DEF	Deflection
DEMOD.	Demodulator
DEMPX	Demultiplexer
DET	Detector
DIFF. AMP	Differential Amplifier
DISCRI.	Discriminator
DISP.	Display
DL	Delay Line
DN	Down
DO	Dropout
DOC	Dropout Compensator
DRAM	Dynamic Random Access Memory
D.REF 25/30	Delayed Reference 25/30Hz
D.SW 25/30	Delayed Switching 25/30Hz
DSP	Digital Signal Processor
DT/OE	Data Transfer/Output Enable
D/W	Dark/White
DWC	Delayed Write Clock
E	
EA-ROM	Electrically Alterable Read Only Memory
E-E	Electronic-to-Electronic
EMPHA.	Emphasis
EQ	Equalizer
EVF	Electronic Viewfinder
EXT.	External
F	
F.ADV	Frame Advance
F/V	Frequency-to-Voltage Converter
FB	Feed Back
FF	Flip Flop
F.FWD	Fast Forward
FG	Frequency Generator
FM	Frequency Modulation
FREQ.	Frequency
FRAME ADV	Frame Advance
Fsc	Color Sub Carrier Frequency
FWD	Forward
G	
GEN	Generator
GND	Ground
H	
H	Horizontal
HBF	Horizontal Burst Flag
HD	Horizontal Drive
Hi-Fi	High Fidelity
HLT	Halt
HPF	High-pass Filter
HPL	High-pass Limiter
HSS	Horizontal Sync. Separator
I	
IF	Intermediate Frequency
INC	Row Counter Increment
INDI.	Indicator
INT.	Internal
INV.	Inverter
I/O	In/Out (Input/Output)
IR	Infrared Rays
IRIS DET	Iris Detection
IRT	Instant Recording Timer
L	
LCD	Liquid Crystal Display
LIN.	Linear
LM	Loading Motor

L	
LNC	Line Noise Canceller
LOG	Logarithm
LP	Long Play
LP (H)	Long Play Signal (Active High)
LPF	Low-pass Filter
LUMA	Luminance
L/R	Left/Right
M	
MAN	Manual
M.BRAKE	Main Brake
M.CUT	Monitor Cut
MEM.	Memory
MEM ON	Memory ON
MEM SW	Memory Switch
MEM VIDEO	Memorized Video
MIX	Mixer
MMV	Monostable Multivibrator
MOD.	Modulator
MPX	Multiplex
MPX VIDEO	Multiplexed Video
M.STATE	Mechanism State
M.STOP	Memory Stop
MTS	Multi Channel Television Sound
N	
NEG	Negative
NFB	Negative Feed Back
NORM. or NOR.	Normal
NR	Noise Reduction
O	
OB	Optical Black
O/E	Odd/Even Field
OSC	Oscillator
OSD	On-Screen Display
P	
PB/PLAY	Playback
P.CONT	Power Control
PIF	Picture Intermediate Frequency
PG	Pulse Generator
P IN P	Picture in Picture
PIX MOVE	Picture Move
PLL	Phase Locked Loop
POS.	Positive
POWER CONT.	Power Control
PROG.	Program
PROTECT.	Protector
PWM	Pulse Width Modulation
R	
R (RED)	Color Signal RED
RAM	Random Access Memory
RAS	Row Address Strobe
RC	Reading Clock
RCC	Reading Clock Clear
RCR	Row Counter Reset
REC	Record
RECT.	Rectifier
REF	Reference
REF 25/30	Reference 25/30Hz from servo circuit
REG	Regulator
REL	Refresh Control
REW	Rewind
REV	Reverse
RF	Radio Frequency
RM	Reel Motor
ROM	Read Only Memory
R-YL	Color Difference Signal R-YL
S	
SAP	Second Audio Program
SAW	Sawtooth
SC	Serial Control
SC1 (0°)	3.58MHz Subcarrier Signal 1 (0-degree Phase Shifted)

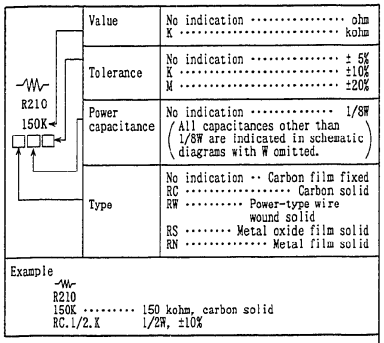
S	
SC2 (90°)	3.58MHz Subcarrier Signal 2 (90-degree Phase Shifted)
SEP.	Separator
SG	Signal Generator
S/H	Sample and Hold
SIF	Sound Intermediate Frequency
SOL	Solenoid
SP	Standard Play
SP/LP	Standard Play/Long Play
S.REEL	Supply Reel Sensor
SRCH	Search
SRV	Servo
STABI.	Stabilizer
S.TRACK	Slow Tracking
STBY	Standby Mode
S-VHS	Super VHS
SW 15Hz	15Hz Head Switching Pulse
SW 25/30Hz	25/30Hz Head Switching Pulse
SYNC	Synchronizing signal
SYS.CON	System Control
T	
T (TELE)	Telephoto Angle
T.BRAKE	Take-up Brake
T/L	Tuner/Line
TP	Test Point
T.REEL	Take-up Reel Sensor
T.RESET	Timer Reset
TRS	Transfer
TμP	Timer Microprocessor
TU-μP	Tuning Microprocessor
U	
U/D	Up/Down
UNI.	Unified
V	
V (VERT)	Vertical
VAR	Variable
V.AGC	AGC Voltage
VCA	Voltage Controlled Amplitier
VCO	Voltage Controlled Oscillator
V.DRV	Vertical Drive Pulse
V.DUB	Video Dubbing
V/F	Voltage to Frequency Converter
VHS	Video Home System
VF	Focus Voltage
VOL.	Volume
V-REF	Voltage Reference
VP	Vertical Pulse
VSS	Vertical Sync. Separator
Vss	Voltage Super Source
VT	Tuning Voltage
VT-U	Tuning Voltage-UHF
VT-V	Tuning Voltage-VHF
VCXO	Voltage Controlled Crystal Oscillator
W	
WC	Write Clock
WCC	Write Clock Clear
WE	Weighting
WHT	Color Signal WHITE
WIDE	Wide Angle
WHD	Wide Horizontal Drive
WHT BAL CONT.	White Balance Control
Y	
Y	Luminance Signal
Y/C	Luminance/Chrominance
YE (YEL)	Color Singal YELLOW
YL	Luminance Signal (Low Component)
ANOTHER	
μP	Microprocessor
5V	ON 5V B+ Source
9V	ON 9V B+ Source

WHEN USING THIS SERVICE REFERENCE MATERIAL

1. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables to read abbreviations and replace parts correctly.

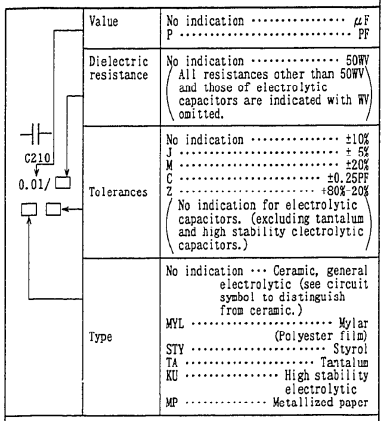
[RESISTORS]



Example

R210
150K ····· 150 kohm, carbon solid
RC.1/2.K 1/2W, ±10%

[CAPACITORS]


C210
0.01/
Value
No indication ····· μF
P ····· PF
Dielectric resistance
No indication ····· 50WV
(All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
Tolerances
No indication ····· ±10%
J ····· ± 5%
M ····· ±20%
C ····· ±0.25PF
Z ····· +80%-20%
(No indication for electrolytic capacitors. (excluding tantalum and high stability electrolytic capacitors.)
Type
No indication ··· Ceramic, general electrolytic (see circuit symbol to distinguish from ceramic.)
MYL ····· Mylar (Polyester film)
STY ····· Styrol
TA ····· Tantalum
KU ····· High stability electrolytic
MP ····· Metallized paper

Example

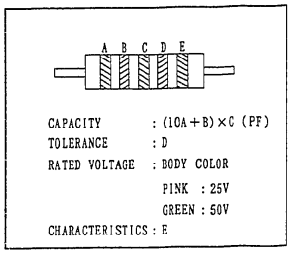
C210
0.01/25 ····· Mylar, 0.01μF, 25WV
MYL.J ±5%

2. Markings in Schematic and Circuit Board Diagrams

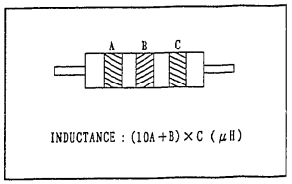
(1) Parts with marks "▣" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.
(2) Parts with marks "●" attached to circuit numbers in the schematic and circuit board diagrams are chip components.
(3) Parts with marks (2) in the circuit board diagrams are leadless jumpers.

3. How to Read Capacitance of Resistance-Type Capacitors and Coils

[CAPACITOR]



[COIL]



COLOR	A, B	C	D	E
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6			
Violet	7			
Gray	8		±30%	High dielectric constant type
White	9			For temperature compensation
Gold		10^{-1}	± 5%	
Silver		10^{-2}	±10%	High dielectric constant type

4. Cautions on Use of MOS ICs

(1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
(2) High voltages may be applied during soldering caused by leakages from the soldering iron. Be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
(3) The human body and clothes made of synthetic fiber or nylon gloves may be charged with several thousand volts of static electricity because of friction. Workers should be grounded.

LEADLESS (CHIP) COMPONENT IDENTIFICATION

1. Leadless Transistor

The part name of a leadless transistor is indicated by a code on its surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, three letters, or four letters.

Note: There are transistors with the same code but differnt part names, or with the same part name but different codes. Refer to the parts lists to finally identify a transistor.

CODE	PART NAME	CODE	PART NAME
Leadless (Chip) Transistor			
3925	2SC3925	BR	2SC2412K
1CQ	2SB902	BR	2SC4617
1D	2SC3127	BS	2SC2412K
1DS	2SD1328S	C-7	2SA811
1DT	2SD1328	C1G	KSC1623
1R	2SB970TX	CB	2SC3646
2BQ	2SK374PQ	CC	2SA1122C
2BR	2SK374QR	CC	2SC3647T
2Y	2SC3757	CC	2SC3647
2YQ	2SC4691	CD	2SA1122D
3N	2SK620	CE	2SA1122E
4N	XN5601	CK	2SD999
4Q	XN1B301	CP	2SC4097
4R	XN1C301	CQ	2SC2411K
5C	XN4601	CR	2SB710
5C	XP4601	CR	2SC2411
5H	XP4501	CR	2SB1219
5H	XN4501	D16	2SC1622A
5K	XP4401	D17	2SC1622A
5K	XN4401	D18	2SC1622A
5L	XN5501	DB	2SD1766
5N	XN6501	DE	2SC2463
5O	XN6401	DF	2SD1623
5R	XP1501	DF	2SD1898
5R	XN1501	DG	2SD1624
5S	XN1504	DK	2SB798
5V	XN1401	EC	2SA1022
5W	XN2501	F-2	2SC1009F2
5X	XN4504	F-3	2SC1009F3
7R	XN2401	F-4	2SC1009F4
7S	XN1601	FC	2SC2619
AA	2SD1757K	FR	2SA1774
AKQ	2SA1738	FR	2SA1037K
AKQ	2SA1806	FR	2SA1576R
AL	2SA1791	FS	2SA1037K
AM	2SC4656	GC	2SC2734
AO	2SB709AQR	GM	3SD1615
AQ	2SB709AQ	HQ	2SA1036K
AQ	2SB766	IC	2SC3016
AR	2SB1462	IRD	2SA1484
AR	2SB766	IS	2SB792S
AR	2SB709ARS	IT	2SB792T
AR	ASB1218R	L-4	2SC1623L4
AS	2SB766	L-5	2SC1623L5
AS	2SB709AS	L-6	2SC1623L6
B3	2SC1621B3	L-6	2SC2812L6
B4	2SC1621B4	L-7	2SC2812L7
BC	2SB1188	L5	MMBC1623L5
BD	2SB1121	L6	MMBC1623L6
BE	2SB1260	LB	2SC2462B
BF	2SB1123	LC	2SC2462C
BF	2SB1308	LD	2SC2462D
BG	2SB1124	LR	2SC2412KLN
BH	2SB1001	M-5	2SA812
BQ	2SB709A	M-6	2SA1179
BR	2SC4081R	MC	2SA1052MC

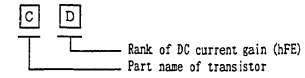
CODE	PART NAME	CODE	PART NAME
Leadless (Chip) Transistor			
MD	2SA1052MC-D	ZS	2SD874S
N3	2SC1653	VR	2SD968A
ND	2SD1306ND	W1	FMW1
NE	2SD1306NE	W10	FMW10
PD	2SA1171D	W2	FMW2
PS	2SD814	W3	FMW3
QB	2SC2620QB	WR	2SD602
QC	2SC2620QC	X1	UMX1
QO	2SC2714	X1	IMX1
R22	2SC4226	X2	IMX2
R22	2SC3356	Y1	FMY1
R32	2SC4227	Y12	2SA1464
R34	2SC3583	Y25	NTM3906
R42	2SC3585	Y3	FMY3
RB	2SC2618RB	YCD	2SK197
RC	2SC2618RC	YI	2SA1666
RK	2SC3357	YQ	2SD601YQ
S1	FMS1	YR	2SD601YR
S2	FMS2	YR	2SD1819R
SC	2SA1121	YR	2SD2216
SO	2SA1162	YS	2SD601YS
SP	2SC3082K	Z1	IMZ1
T1	IMT1	Z2	IMZ2
T1	UMT1	ZO	2SD874T
T2	IMT2	ZQ	2SD601A
UD	2SC2404	ZR	2SD874R
Digital Transistor			
3	DTC143TK	6C	UN9113
4	DTC114TK	6S	XP4113
6	DTC144TK	8B	UN5212
13	DTA143EK	8C	UN9213
14	DTA144EK	8C	UN2213
15	DTA124K	8S	XP4213
15	DTA124EU	9L	XP1213
16	DTA144EU	9L	XN1213
16	XDA144EK	A1	FMA1
16	DTA144EE	A1	UMA1
23	DTC143EK	A2	FMA2
24	DTC114EU	B2	UMB2
24	DTC144EK	B2	IMB2
25	DTC124EU	C2	FMC2
25	DTC124K	C5	FMC5
26	DTC144EE	D2	IMD2
26	DTC144EU	F52	DTB123
26	XDC144EK	G1	FMG1
33	DTA143XK	G2	FMG2
43	DTC143XK	G21	DTD113ZK
52	DTA123YK	G5	FMG5
60	UN511F	HO3	DTC343TK
64	DTC114YK	H2	IMH2
80	UN521F	H2	UNH2
4P	XN1A312T	H27	DTC363EK
6B	UN5112	RO4	KSR1104
6C	UN2113	R31	FP1L2Q
FET			
30	2SK621	WS	2SK322T
1FQ	2SK321FQ	WT	2SK322T
1FR	2SK321FQR	X15	2SK425
1KP	2SK316	X4	2SK94
2BQ	2SK663	XAF	2SK980FG
DY	2SK1579	YC	2SK197YC
JO	2SK208	YD	2SK197YD
K	3SK166	YE	2SK197YE
K4	2SK160K4	ZD	2SK217ZD
K5	2SK160K5	ZE	2SK217ZE
KB	2SK323		

(1) Identification with two letters

Use this code and the following chart for transistor identification.

Example:

Code	Part name
CD	2SA1122D
LD	2SC2462D

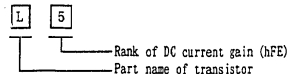


(2) Identification with one letter and one numeral

Use this code and the following chart for transistor identification.

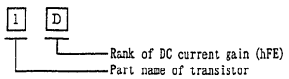
Example:

Code	Part name
L5	2SC1623(5)
L6	2SC1623(6)



Example:

Code	Part name
1D	2SC3127D



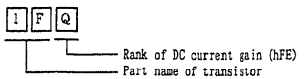
Note: Codes S1, S2, T1, W1, W2, W3, X1, Y1, Y3, Z1 and Z2 encode only the part names.

(3) Identification with one numeral and two letters

Use this code and the following chart for tarnsistor identification.

Example:

Code	Part name
1FQ	2SK321Q

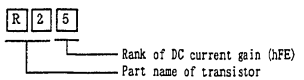


(4) Identification with one letter and two numerals

Use this code and the following chart for transistor identificaion.

Example:

Code	Part name
R25	2SC3356

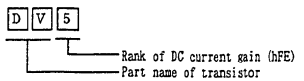


(5) Identification with to letters and one numeral

Use this code and the following chart for transistor identification.

Example:

Code	Part name
DV5	2SD596

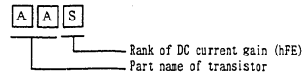


(6) Identification with three letters

Use this code and the following chart for transistor identification.

Example:

Code	Part name
AAS	2SD1757KS



2. Leadless Diode

The part name of a leadless diode is indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals and one letter, or three numerals. Use this code and the following table to identify the part name of a diode.

Note: Refer to the parts lists to finally identify a diode.

CODE	PART NAME	CODE	PART NAME
Diode			
0	HVU300A	3D	RB715F
1.0	1SV201	3.0L	MA3030L
2.0	MA3020	3.6L	MA3036L
5.1	MA3051L	3.9L	MA3039L
5.1	MA3051M	4.3H	MA3043H
6.8	MA3068	4.3L	MA3043L
6.8	MA3068M	4.3M	MA3043M
7.5	MA3075L	4.7L	MA3047L
8.2	MA3082M	4.7M	MA3047M
9.1	MA3091	5.1H	MA3051H
20	H2M6	5.1L	MA3051L
24	1SV221	5.1M	MA3051M
27	RD2.7M B	5.6M	MA3056M
30	RD3.0M B	6.2L	MA3062L
51	RD5.1M B2	6.2M	MA3062M
56	RD5.6M B	6.8H	MA3068H
91	RD9.1M B	6.8L	MA3068L
102	RD10M B2	6.8M	MA3068M
122	RD12M B2	6.8M	MA3068
163	RD16M B3	7.5H	MA3075H
182	RD10M B2	7.5L	MA3075L
271	RD2.7M B	8A	UN221D
272	D2.7M B2	8.2H	MA3082H
301	RD3.0M B	8.2M	MA3082M
362	D3.6M B2	9.1M	MA3091M
391	D3.9M B1	9.1M	MA3091
512	RD5.1M B2	10L	MA3100L
561	RD5.6M B	10M	MA3100M
621	RD6.2M B1	11L	MA3110L
681	RD6.8M	12M	MA3120M
683	RD6.8M B3	13H	MA3130H
911	RD9.1M B	18M	MA3180M
2.7H	MA3027H	36M	MA3360
Zener Diode			
1A	MA110	M3A	MA199
A3	1S2835	MC	MA153
A4	HSM2836C	MC	MA143
A5	1S2837	MH	MA141K
A6	HSM2838C	MH	MA151K

CODE	PART NAME	CODE	PART NAME
Zener Diode			
B	SB0505CP	MH	MA152K
B64	SFPB64	MI	MA132K
B74	SFPB74	MN	MA141WA
BE	1SV172	MN	MA152WK
C1	HSM88S	MN	MA151WA
C2	HSM276S	MO	MA132WA
C3	1SS226	MO	MA152WA
C4	HSM88WK	MP	MA133
F7	KV1470	MT	MA151WK
H5	HVM14	MI	MA141WK
J	SB07-03C	MU	MA132WK
K	DA221	MU	MA151WA
M1A	MA159	N	DAN222
M1C	MA158	N	DAN202T
M1M	MA721	NU	MA152WK
M1N	MA713DAT	P	DAP202T
M1P	MA714	S4	D1FS4
M2A	MA122	SA	SB10-05P
M2B	MA123	Z	DA106K

3. Leadless Resistor

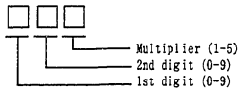
The resistor value is indicated on its surface, using three numerals, or one letter and one numeral.

(1) Identification with three numerals

Read this code following the same procedure as when reading the color code on discrete resistors.

Example :

code	value
330	33 x 10^0 = 33 ohms
561	56 x 10^1 = 560 ohms
123	12 x 10^3 = 12K ohms
1R2	1 + 0.2 = 1.2 ohms (R : Decimal point)



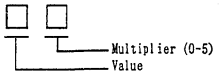
(2) Identification with one letter and one numeral

Use this code and the following chart for resisitor identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example :

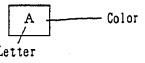
code	value
A1	1 x 10^1 = 10 ohms
G2	1.8 x 10^2 = 180 ohms
L3	2.7 x 10^3 = 2700 ohms
S4	4.7 x 10^4 = 47K ohms
W5	6.8 x 10^5 = 680K ohms



4. Leadless Capacitors

The capacitor value is indicated on its surface, using body color and one letter, or one letter and one numeral.

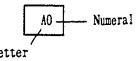
(1) Identification with body color and one letter



Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	A	100(PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
Black	A	10(PF)		U	560
	C	12		W	680
	E	15		Y	820
	G	18	White	A	0.001(μF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	33		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68	Green	A	0.01(μF)
	Y	82		E	0.015
				J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082
			Yellow	A	0.1(μF)

Example : Color	Letter	Value
Red	A	1PF
Black	A	10PF

(2) Identification with one letter and one numeral

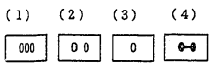


Letter/Numeral	Value	Letter/Numeral	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
A1	10(PF)	U2	560
C1	12	W2	680
E1	15	Y2	820
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56	A4	0.01(μF)
W1	68	E4	0.015
Y1	82	J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

Example : Letter/Numeral	Value
A0	1PF
A1	10PF

5. Leadless Jumper

The leadless jumper is indicated as shown below.



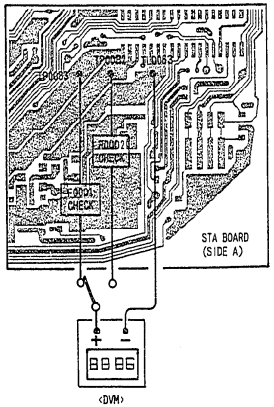
BLOWN FUSE CHECK/FUSE REPLACEMENT PROCEDURE

This section describes the method to check if the fuses have blown and how to replace them.

1. Blown fuse check

Remove the front case block, referring to Chapter 2, and then connect a DC voltmeter to the STA board to measure the voltage.

● Connection diagram

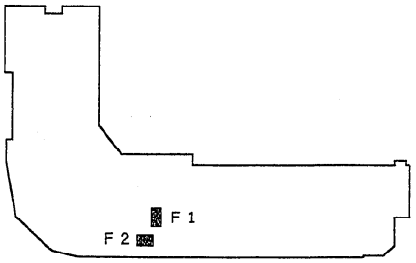


● Measurement method

1) Connect the AC adapter to the camera/recorder to turn it on.
2) Connect a DC voltmeter to the STA board (side A) as shown in the diagram.
3) Measure the voltage at each test point and check that they are 6.5±0.5V.
4) If the voltages are low, the fuses have probably blown.

2. Fuse replacement procedure

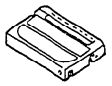
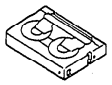
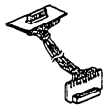
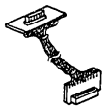
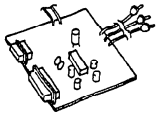
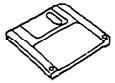
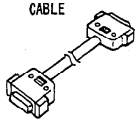
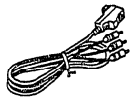
● Connection diagram



● Measurement method

1) Remove the STA board, referring to Chapter 2.
2) Replace the fuses on the STA circuit board with the newly specified ones.

JIGS AND TAPES FOR ADJUSTMENT

1. ALIGNMENT TAPE COLOUR BAR/400Hz (20HSC-3) No.7099232 	2. CASSETTE TORQUE METER SRK-8T-232 No.7099236 SRK-8T-212 No.7099402 	3. MASTER PLANE No.7099237	4. REEL DISK HEIGHT JIG No.7099238
5. SPECIAL DRIVER No.7099239	6. ATF-R JIG (SW3:ON) No.7099461	7. C12 LIGHT BALANCE FILTER 46mm φ No.7099369	8. 12-PIN EXTENSION CABLE No. 7069070
9. 22-PIN EXTENSION CABLE No.7069071 	10. 36-PIN EXTENSION CABLE No.7069072 	11. DSP AV OUTPUT JIG No.7099456	12. DSP-R JIG No.7099448 
※13. ADJUSTMENT FLOPPY DISK No.7069101 	★14. PERSONAL COMPUTER	★15. PERSONAL COMPUTER 9-PIN or 25-PIN CABLE 	◎16. AV OUTPUT CABLE
17. AV INPUT CABLE No.5860771 			

MARKS
※ : New jigs and tools
★ : Goods on the Market
◆ : Optional Accessory
◎ : Accessory

NOTE
1: Always set SW3 on the ATF-R jig to ON.
2: The ATF jig (No.7099386) can also be used in place of ATF-R jig to adjust this model.
3: The DSP jig (No.7099442) can also be used in place of DSP-R jig to adjust this model.
4: Either the monaural or stereo AV input/output cable can be used.

HOW TO USE THE EXTENSION CABLE

JIG No.	NAME OF EXTENSION CABLE	PARTS No.	HOW TO USE (PURPOSE OF USE)
8	12-PIN EXTENSION CABLE	7069070	• Installed between the STA circuit board and T/W SWITCH UNIT.
9	22-PIN EXTENSION CABLE	7069071	• Installed between the SPE board and MAN circuit boards.
10	36-PIN EXTENSION CABLE	7069072	• Installed between the STA and MAN circuit boards.

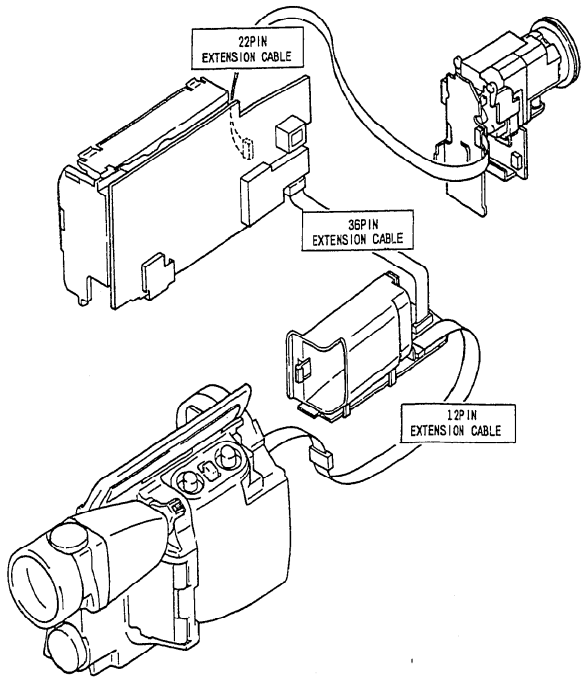


Fig. 1-1 Extenshion Cable Connection Diagram

MAINTENANCE/INSPECTION PROCEDURE

1. Required Maintenance

The recording density of a VCR is much higher than that of an audio tape recorder. VCR components must be very precise to ensure compatible with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective.
To ensure a good picture, periodic inspection and maintenance, including replacement of worn-out parts and lubrications, is necessary.

2. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR, and the environment in which the VCR is used. But, in general home use, a good picture will be maintained if the inspection and maintenance is done every 500 hours. Table 1 shows the relation between time used per day and inspection period.

Table 1

Average hours used per day	When inspection is necessary: About 6 months	About 9 months	About 18 months
One hour			
Two hours			
Three hours			

3. Check before starting Repairs

The faults occurring in the playback picture as shown in Table 2 can be remedied by cleaning and oiling. Check the need for lubrication and the conditions of cleanliness in the unit.
Check with the customer to find out how often the unit is used. If from that you determine that the unit is ready for inspection and maintenance, check the parts shown in Table 2.

Table 2

Phenomenon	Inspection Location
Poor S/N, no color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, cylinder or in tape transport system
Vertical jitter	Dirt on video head or in tape transport system
Low volume or sound distorted	Dirt on video head or worn video head

4. Tools Needed for Inspection and Maintenance

(1) Head cleaning kit
(2) VCR oil and grease (Table 3)
(3) Alcohol
(4) Gauze
(5) Cleaning tape [Maxell 8M-CL MCA (dry type)]

Table 3 Locations for Greasing and Oiling

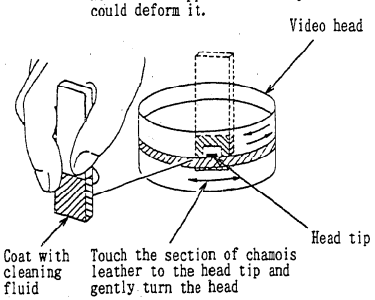
Name	Oil or Greasing Location
Sonic Slidas Oil (#1600)	Oil low-speed rotating sections
Froil (G31-SA)	Lubricate metal or molded section under light load
Molicoat (PG-641)	Lubricate metal or molded sections under light load
Lock paint	Fix adjustment screws and nuts.

5. Maintenance Procedures

5-1 Cleaning

(1) Cleaning video head
First use a cleaning tape. Be sure to use the specified cleaning tape and read its instruction sheet carefully before using it. If dirt on head is too stubborn to remove by tape, use the cleaning kit. Moisten the cleaning stick with cleaning fluid at the point indicated.
Touch the stick to the head tip and gently turn the head (rotating cylinder) to the right and left. (Do not move the stick vertically and make sure that only the chamois leather on the stick comes into contact with the head. Otherwise, the head may be damaged.) Thoroughly dry the head. Then test run a tape.
If cleaning fluid remains on the video head, the tape may be damaged when it comes into contact with the head surface.

(2) Cleaning the tape transport system and drive system, etc.
Wipe with gauze moistened with alcohol.
Notes: 1) The tape transport system is the system which comes into contact with the running tape. The drive system consists of those parts which run the tape.
2) Make sure that during cleaning you do not touch the tape transport system with the tip of a screwdriver and that no force is applied to the system that could deform it.


Video head
Head tip
Coat with cleaning fluid
Touch the section of chamois leather to the head tip and gently turn the head

5-2 Lubrication

(1) Guide lines for lubricating with oil
Use the oiler to apply one or two drop of Sonic Slidas oil. Make sure not to use too mach oil because it may spill over or leak out coming into contact with rotating parts and causing slippage or other problems. If too much oil is applied, wipe clean with alchohol.

(2) Periodic oil lubrication
Lubricate the specified locations only when replacing components. Refer to the exploded views for the lubricating locations.

5-3 Greasing

(1) Greasing guidelines
Apply grease Froil or Molicoat, with a stick or brush. Do not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with gauze moistend with alcohol.

(2) Periodic greasing
Grease the specified locations only when replacing components. Refer to the exploded views for the greasing locations.

Table 4 Parts to be Maintained/Inspected and Maintenance/Inspection Schedules

Caution: The following table does not apply to all units. The maintenance/inspection schedules depend on how the unit is used and the environment in which it is used.

Component \ Hours	500	1000	1500	2000	2500	3000
Video heads (cylinder assembly)	C	C/R	C	C/R	C	C/R
Supply guide roller	C	C	C	C	C	C
Supply guide pole	C	C	C	C	C	C
Take-up guide roller	C	C	C	C	C	C
Take-up guide pole	C	C	C	C	C	C
Take-up slant pole	C	C	C	C	C	C
Tension pole	C	C	C	C	C	C
Tape guide of the pull-out arm	C	C	C	C	C	C
Tension band		R		R		R
Supply reel disk				R		
Take-up reel disk				R		
Pressure roller	C	C	C	C/R	C	C
Impedance roller	C	C	C	C	C	C
Capstan belt				R		
Idler gear				R		
Capstan shaft (capstan motor)	C	C	C	C/R	C	C
Loading motor				R		

C : Cleaning
R : Parts replacing

DISASSEMBLY

1. MAINTENANCE OF WATER-RESISTANT PACKING

◆ Cautions when replacing packing

1) Be careful that no water enters the case.
2) Be careful not to damage the new packing.
3) Replace the packing so as not to damage it.
4) After replacing the packing, check that no foreign object adheres to the packing and coat only the sections shown in Fig.1-2 with grease.

◆ How to install the main packing

- Install it as shown in Fig. 1-1.
- Be careful as the packing is asymmetrical.

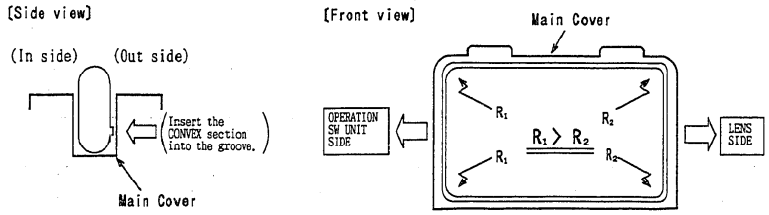


Fig.1-1

NOTE:
- Check the packing frequently and replace if anydamage is found.

◆ Packing fitting positions

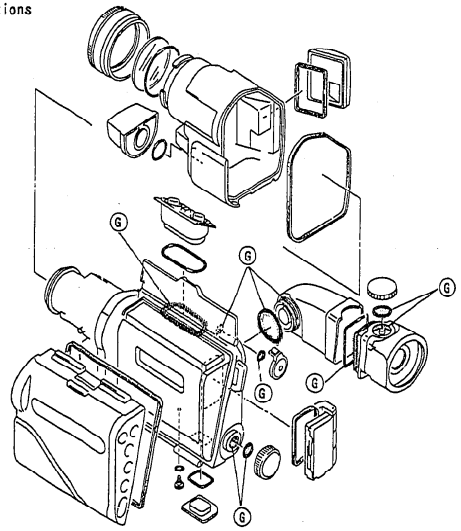


Fig. 1-2

The sections identified by Ⓖ in the figure should be coated with silicone grease.

2. IDENTIFICATIONS AND LOCATIONS OF CIRCUIT BOARDS

[Right side View]

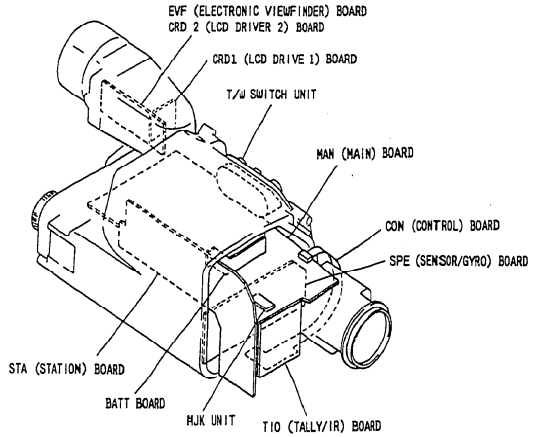


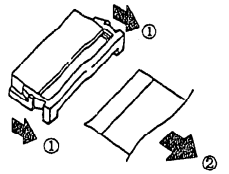
Fig. 2-1

3. BEFORE STARTING DISASSEMBLY

1) When dismantling the lens block, be sure not to remove components other than the zoom motor, iris block, focus motor and flat cable of the lens.
2) [Procedure when removing]
   Remove the components in the order of letters (A, B, C···) in the illustrations.
   [Procedure when reinstalling]
   Reinstall the components by the reverse procedure to removal when not otherwise specified.
3) Disconnect flat cables from connectors by the procedure show in Fig. 3-1.
   Since many circuit boards in the camcorder are connected by in-board connectors, be sure to follow DISASSEMBLY when removing the circuit boards.
4) How to disconnect a flat cable (Fig.3-1)

① Release the locks on the left and right of the connector simultaneously.
② Pull out the flat cable.

[How to disconnect a flat cable]



① Release the locks on the left and right of theconnector simultaneously.
② Pull out the flat cable.

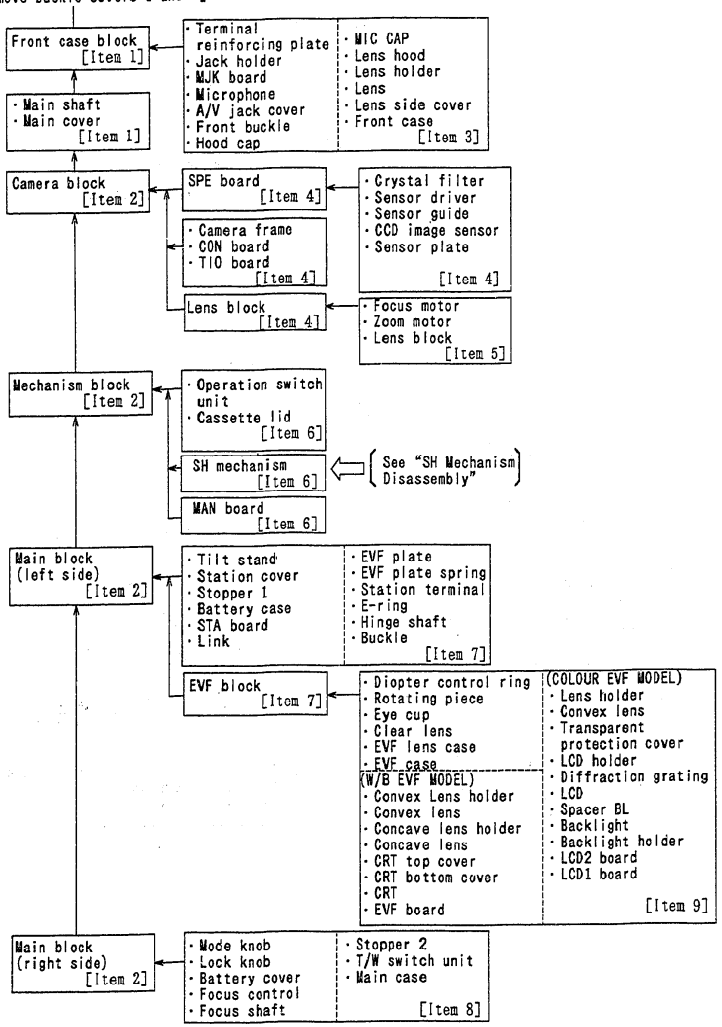
Fig. 3-1

4. COMPONENTS REMOVAL

Refer to the following "parts hierarchy chart" first when replacing defective parts.
This chart shows the parts removal procedure as the hierarchy in which parts should be replaced.
[How to use the parts hierarchy chart]
(1) Search for the part to be replaced in the chart.
(2) Check the part in the rank above the part to be replaced and then start dismantling.
(3) Replace the defective part and install it by the reverse procedure to that in the hierarchy chart.

• Parts Hierarchy Chart

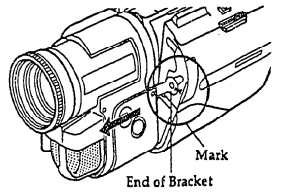
[Remove buckle covers 1 and 2]



1. Front Case Block, Main Cover

◆ Caution during work
1) When removing the main cover, shown in Ⓐ remove the link beforehand.

Ⓐ



Open the case so the end of the bracket is positioned as shown in the figure and pull the bracket forward to release it.

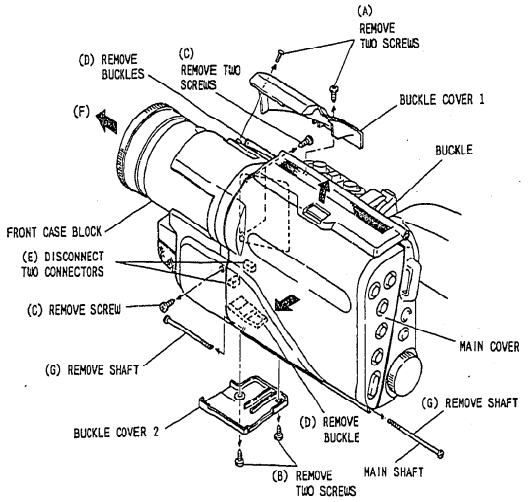


Fig. 4-1

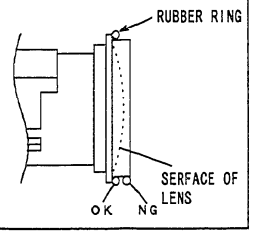
2. Camera, Mechanism and Main Blocks

◆ Caution during work

1) When removing the camera block from the main board, move the camera block sideways and disconnect the connectors, then pull it out forward.
2) Reinstall the rubber rings as shown in Ⓑ.

Ⓑ

<HOW TO REINSTALL A RUBBER RING>



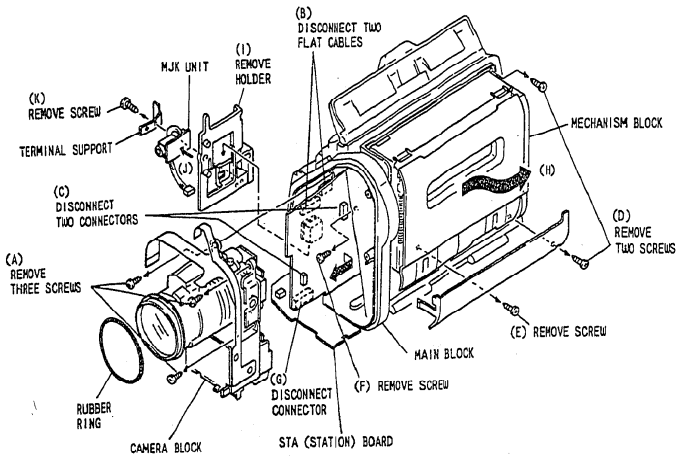
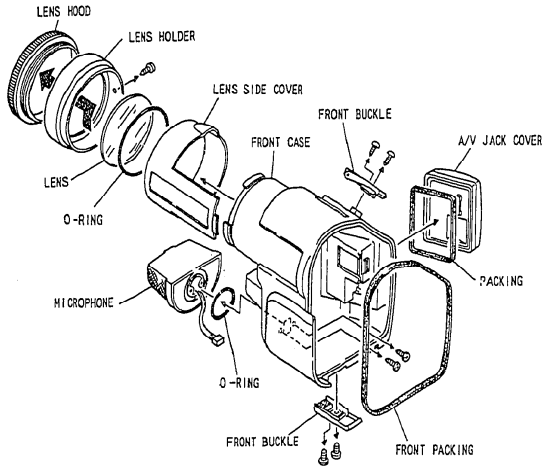


Fig. 4-2

3. Disassembly of Front Case Block

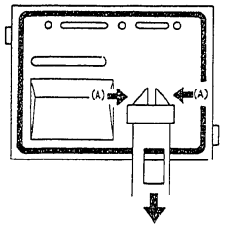
◆ Caution during work

1) See Fig. 4-3 Ⓒ when removing the A/V jack cover.
2) Remove the screw holding the glass holder and turn the holder clockwise until it stops, then pull it out.
Be careful that the glass is not broken when it is removed at this time.



Ⓒ

<A/V Jack Cover Removal>



• Push the stoppers on both sides in the directions of arrows (A) to release them and pull out the cover downward.

Fig. 4-3

4. Disassembly of Camera Block

◆ Caution during work

1) The CON board is fixed to the camera frame using double-sided adhesive tape. Remove the tape in the direction of arrow (D) when removing the CON board.

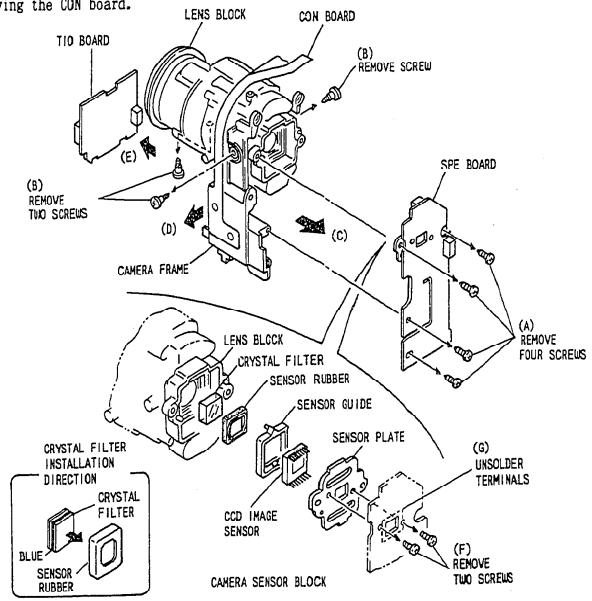


Fig. 4-4

5. Disassembly of Lens Block

◆ Cautions during work

1) Follow Ⓓ when reinstalling the zoom motor.
2) Follow Ⓔ when removing the focus motor.

◆ Cautions after reinstalling

1) Be sure to re-attach the plastic tape in its original position.

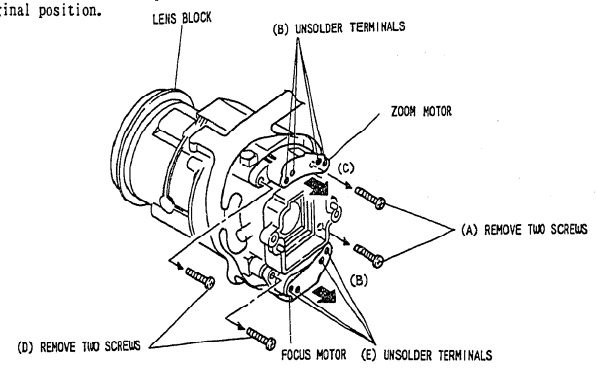
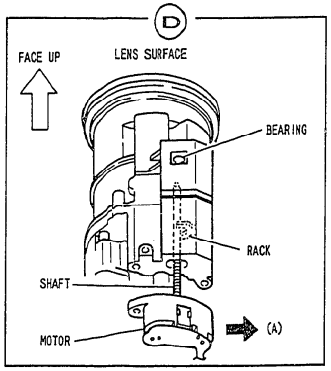


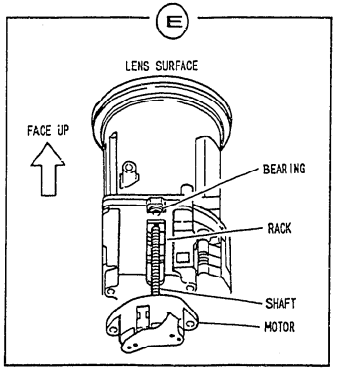
Fig. 4-5

<Zoom Motor Section>



1) Remove the plastic tape from the side.
2) With the lens facing up, move the rack down.
3) Insert the shaft halfway and move it in the direction of arrow (A) to engage it with the rack.
4) Further insert the shaft and push it into the bearing securely to fix it. Check this state through the window on the side.

<Focus Motor Section>



1) Remove the plastic tape from the side.
2) With the lens facing up, move the rack down.
3) Engage the middle of the shaft into the rack from the side.
4) Move the shaft up and push it into the bearing securely to fix it. Check this state through the window on the side.

6. Disassembly of Mechanism Block

◆ Caution during work

1) When reinstalling the cassette lid, be sure to engage the four stoppers on the lid on the mechanical block. Be careful that the sections where the stoppers are engaged on the mechanical block are not damaged.

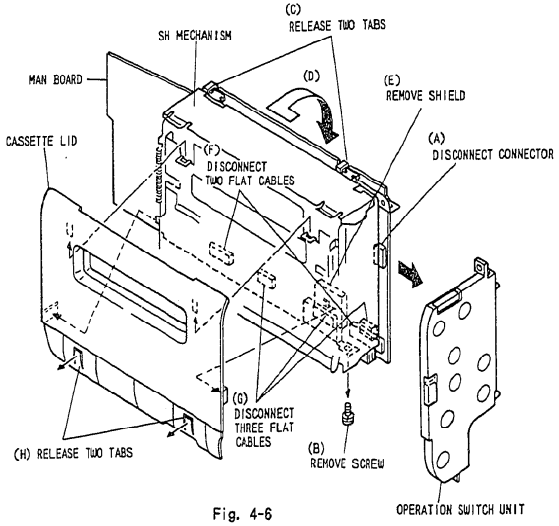
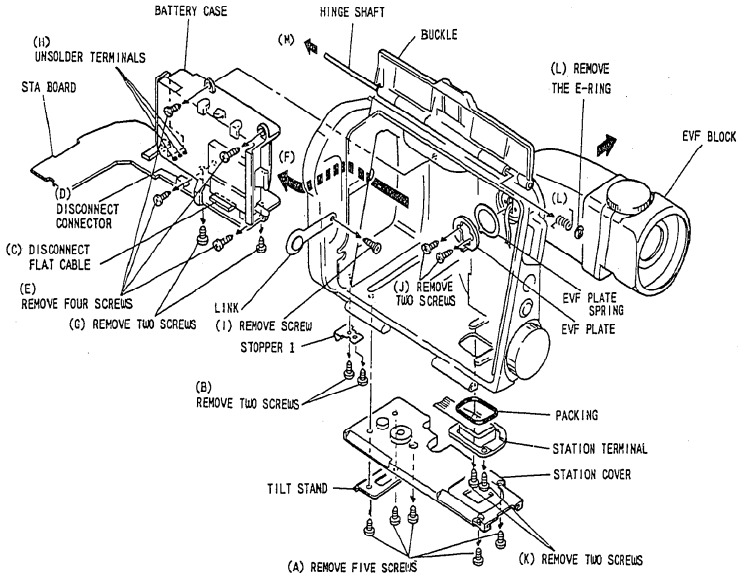


Fig. 4-6

7. Disassembly of Main Block (Left Side)

◆ Caution during work
1) Install the spring of the buckle cover as shown in Ⓕ.



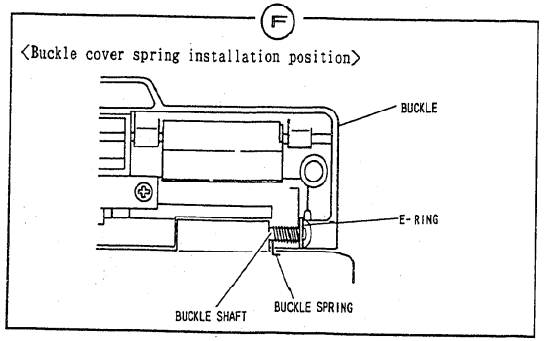


Fig. 4-7

8. Disassembly of Main Block (Right side)

◆ Caution during work
1) When reinstalling the T/W switch unit, install the O-ring and coat the area around it with silicone grease.
Be careful that the O-ring is not twisted.

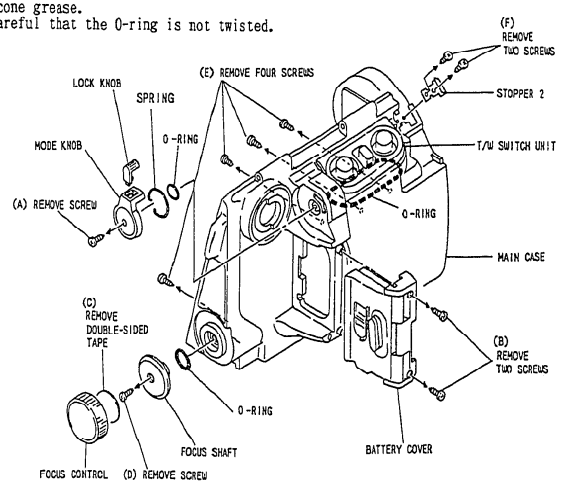


Fig. 4-8

9. Disassembly of EVF Block

◆ Caution during work
1) When handling the LCD, be sure not to touch the LCD panel surface and flat cable connection section.
2) When reinstalling the EVF lens case, coat the EVF packing with silicone grease and install the EVF packing in the EVF lens case, then fit the lens case into the EVF case.
Be careful that the EVF packing is not twisted.

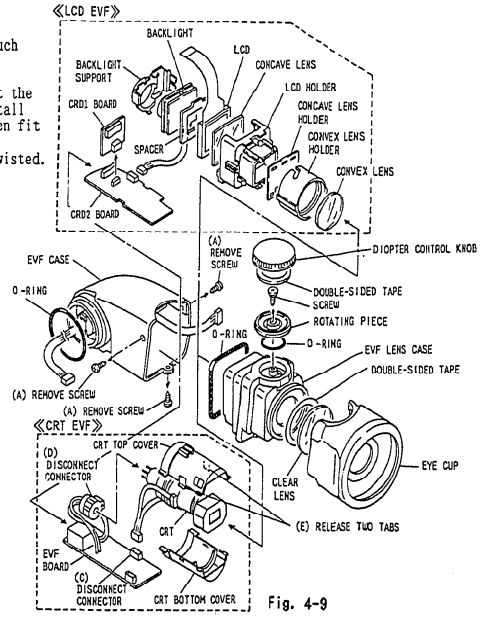


Fig. 4-9

5. WIRE LAYOUT DIAGRAM

・Layout of wires in main case
(Refer to the diagram when reinstalling)

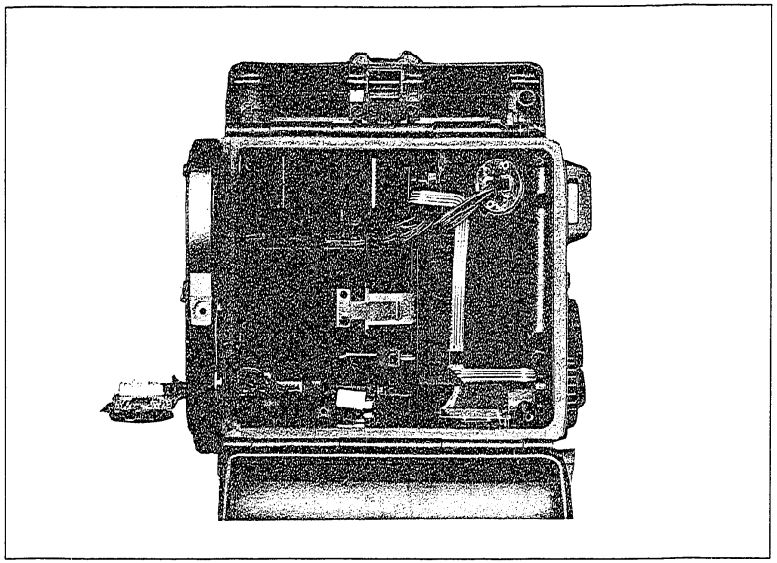


Fig.5-1

ELECTRICAL ADJUSTMENT

Abbreviation

MAP ···· Digital adjustment program for the camera
DSP ···· Digital signal processor

1. CONNECTION FOR ADJUSTMENT

・Most adjustments other than the following items can be done only when the front case block is removed.
・Connect the EVF to display the operation mode on the monitor screen.

◆ To perform the following adjustments, set the camera/recorder to the state as shown in CHAPTER 1 Extension Cable Connection Diagram, referring to "CHAPTER 2 DISASSEMBLY".

・Reference Voltage Adjustment (STA board)
・VCR Section Adjustments (MAN board)
・Electronic Viewfinder Adjustments (CRD2 board)

The EVF block should further be taken apart.

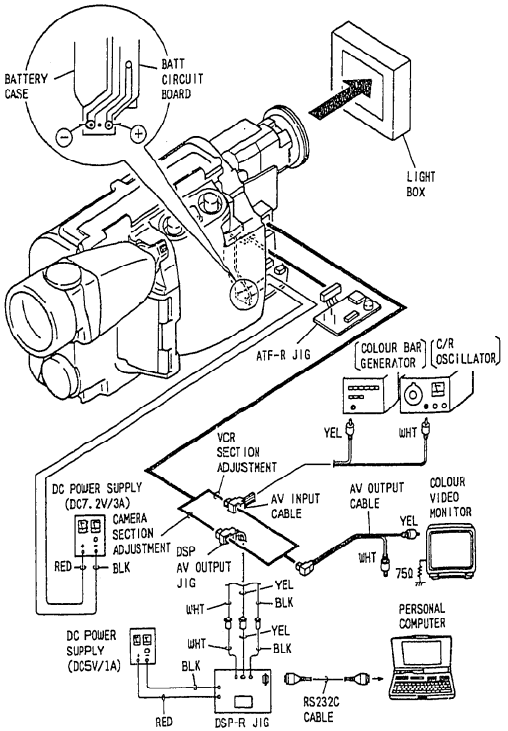


Fig. 1-1 Connection for adjustment

2. CAMERA SECTION ADJUSTMENT

1. CIRCUIT BOARD LOCATIONS

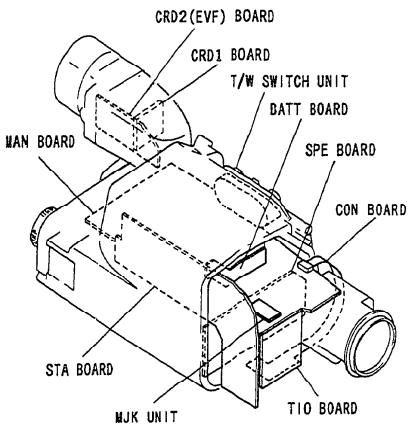


Fig. 2-1

2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT

1) Test Equipment
- Oscilloscope (dual trace) [Vectorscope]
- Digital Voltmeter (DVM)
- Frequency Counter
- Colour Video Monitor

2) Charts, etc.
- Adjustment Floppy Disk
- Personal Computer
- Personal Computer 9-pin or 25-pin (RS232C) Cable
- DSP-R Jig
- DSP AV Output Cable
- Gray Scale Chart
- Colour Bar Chart
- Resolution Chart
- Backfocus Adjustment Chart
- Light Box (3100°K)
- Light Balancing Filter C12
- DC Power Supply (DC7.2V/3A)
- DC Power Supply (DC5V/1A)

3. ADJUSTMENT CONDITION

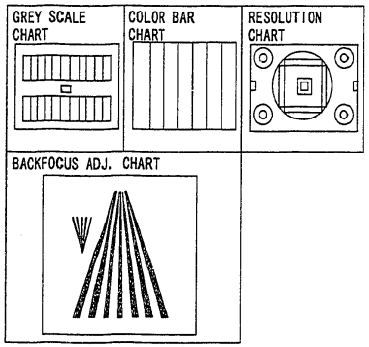
1) Check that the VCR section has been adjusted correctly before adjusting the camera section.
2) Use a light box with minimum flickering. Control the colour temperature of the light box strictly.
3) Connect this unit, a power supply and a Colour video monitor as shown in Fig. 1-1.
4) When using the video out (AV OUT) to perform adjustment, be sure to terminate the AV OUT jack with 75 ohms.
5) Place the chart (light box) approx. 30cm away from the camera (lens surface) when otherwise not specified.
6) Point the camera at the chart to full the video period when otherwise not specified.
7) Use the 10:1 probe of the oscilloscope when otherwise not specified.
8) When "Trigger the oscilloscope internally" is specified, set the time base of the oscilloscope to 10μs/div.

4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- CAMERA/OFF/VIDEO switch ... "CAMERA" position
- INST. ZOOM ..... Not Display mode
- DATE ..... Not Display mode
- DISPLAY ..... Not Display mode
- FADE ..... Not Display mode
- EIS ..... Not Display mode
- 16×9 ..... OFF mode
- B.LIGHT ..... Not Display mode
- TITLE ..... Not Display mode
- FOCUS ..... AUTO mode

5. LIST OF CHARTS FOR CAMERA ADJUSTMENT

Table 2-1



6. CHECK AFTER REPLACING MAJOR COMPONENTS IN THE CAMERA SECTION

After replacing major components, perform adjustments, referring to the table below.
The following table shows the minimum adjustments required after major components are replaced.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Caution : When EEP ROM or the main circuit board is replaced, initialize the EEP ROM, referring to "7-3 Initial Setting by Model", then perform all the camera section and system control/ servo circuits adjustments.

ITEM No.	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS										
		SENSOR BOARD	MAIN BOARD	IC1001	IC1101	IC1106	IC1107	IC1201 IC1202	IC1105	IC1103	IC1402 IC1405	IC1404 IC1407
—	Initial Setting by Model		●				●					
ELECTRIC VOLUME ADJUSTMENT PROCEDURE												
(1)	Sensor Drive Voltage Adjustment	●	●	●			●		●			
(2)	CDS Offset Adjustment		●		●		●					
(3)	Sensor Drive Pulse & Sub Voltage Adjustment	●	●	●			●		●			
(5)	CDS Sampling pulse		●				●			●		
DIGITAL ADJUSTMENT PROCEDURE												
(1)	Auto Iris Control Adjustment	●	●	●	●	●	●	●				
(2)	Knee Adjustment		●				●					
(3)	Matrix Adjustment	●	●	●			●					
(4)	White balance Adjustment	●	●	●			●					
(5)	Chroma gain Adjustment	●	●	●			●					
AUTO FOCUS ADJUSTMENT PROCEDURE												
(1)	Zoom Trace Adjustment	●	●	●			●					
(2)	AF Noise Level Adjustment	●	●	●			●					
STABILIZER ADJUSTMENT PROCEDURE												
(1)	Stabilizer Adjustment	●	●				●				●	●
SPOT NOISE ADJUSTMENT PROCEDURE												
(1)	Spot Noise Adjustment						●					

7. CAMERA SECTION ADJUSTMENT PROCEDURE

— NOTE —

1: To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera recorder and jigs.
2: The following describes an example of the instructions of the personal computer and the menu display; they are different depending on the personal computer manufacturer and model. Refer to the instruction manual of personal computer.
3: When the error message appears during adjustment, refer to "4.Error Messages". If a key is pressed after an error message appears, the ADJUSTMENT MENU is restored.

```
F>
```

Fig. 2-2

↓

LOAD THE CAMERA ADJ. FLOPPY DISK INTO DISK DRIVE B

↓

Press [B] [:] [ENTER]

↓

```
F>B:
B>
```

Fig. 2-3

↓

Press [M] [A] [P] [ ] [I] [B] [M] [SPACE] [1] [ENTER]

↓

(A)

7-1. Connections for Adjustment

Connect the camera/recorder, DSP jig, personal computer, power supply, etc. as shown in Fig. 1-1. during Check that the camera/recorder is turned on.

7-2. How to start the MAP

—— PROCEDURE ——

1) Turn the personal computer on and start the MS-DOS system. (Fig. 2-2)

2) Load the adjustment floppy disk into disk
   (·drive B and press [B] [:] then [ENTER] .
   or
   ·drive A and press [A] [:] then [ENTER] .) (Fig. 2-3)

3) Press [M] [A] [P] [_] [I] [B] [M] [SPACE] [1] then [ENTER] .
   The MAP starts and the MODEL SELECT shown Fig. 2-6 appears.

—— NOTE ——

·When you use a personal computer with two serial interface connectors and connect the DSP jig to serial interface connector 2, press MAP_IBM 2.

4) Select the number accodding to the model.
   If [ESC] (escape) is pressed, the display before the MAP starts (MS-DOS) is restored.

—— NOTE ——

1. If you specify the wrong model, press [ESC] (escape) to restore the MODEL SELECT display, then specify the correct model.
2. If you select number without a model name by mistake, the message shown in Fig. 2-8 will appear in the computer's display. Press any key to return the display to Fig. 2-6 (MODEL SELECT).
3. If the required model is not found, press the [P] key and select the model from the next screen.

(A)

```
F>B:
B>MAP_IBM 1
```

Fig. 2-4

```
Manual adjustment program for service station
        Copyright (C) Hitachi LTD
```

Fig. 2-5

MODEL SELECT

```
**********************************************
*************** MODEL SELECT *****************
**********************************************

          [1]   XXXXXXXX
          [2]   XXXXXXXX
          [3]   XXXXXXXX
          [4]   XXXXXXXX
          [5]   XXXXXXXX
          [P]   NEXT SELECTION
          [ESC] END

     Please select the type of the set.
     Press [1] - [5] or [P] or [ESC]
```

Fig. 2-6

Press numeric key

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM **********
**********************************************

          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 2-7

MESSAGE WHEN OPERATED BY MISTAKE

```
     Can not find the DATA FILE
     **** PRESS ANY KEY ****
```

Fig. 2-8

7-3. Initial Setting by Model

◆ Before Starting Adjstment

- This item describes how to initialize the EEP ROM. Be sure to perform this item after replacing EEP ROM or the main circuit board. When other components are replaced, normally, it is not necessary to initialize the EEP ROM. Press [ESC] (escape) to return the computer's display to MAIN MENU.
- Be sure to perform the following adjustments after completing the initial setting.

CAMERA	7-4	Electric Volume Adjustment Procedure
CAMERA	7-5	Digital Adjustment Procedure
CAMERA	7-6	Autofocus Adjustment Procedure
VCR	7	System Control/Servo Circuits Adjustment

—— PROCEDURE ——

1) Start the MAP.

2) Press [A] to select INITIALIZE. (Figs. 2-9, 2-10)

3) Press [Y] to start. (Figs. 2-10, 2-11)

—— NOTE ——

·Press [N] to return to MAIN MENU. (Fig. 2-10)
·The Fig. 2-10 appears a few time Press the [Y] key each time.

4) If there are no abnormalities in the camera/recorder, the message shown in Fig. 2-11 is displayed in the computer's display for a while, and then the message informing you that the initial setting has been completed (shown in Fig. 2-12) is displayed.

5) If the message shown in Fig. 2-12 appears in the computer's display, press any key. The computer's display returns to Fig. 2-9 (MAIN MENU).

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM **********
**********************************************

          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 2-9

Press [A]

```
<< DATA WRITING >>
START TO SEND DATA.     (Y/N)
```

Fig. 2-10

Press [Y]

```
<< DATA WRITING >>
PLEASE WAIT A MOMENT
```

Fig. 2-11

```
<< DATA WRITING >>
PLEASE WAIT A MOMENT
FINISHED WRITING DATA !!
PRESS ANY KEY !
```

Fig. 2-12

Press any key to return to Fig. 2-9

7-4. Electric Volume Adjustment Procedure

◆ Before Starting Adjstment

·When EEP ROM or the main circuit board is replaced, initialize the EEP ROM, referring to "7-3. Initial Setting By Model" then perform all the electric volume adjustments.

—— PROCEDURE ——

1) Start the MAP.

2) Press [B] to select ELETRIC VOLUME. (Figs. 2-13, 2-14)

3) Select the number of the required adjustment.

— NOTE —

1. If [ESC] (escape) is pressed, the computer's display returns to Fig. 2-13 (MAIN MENU).
2. To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/ recorder and jig.

MAIN MENU

```
**********************************************
******** MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
          or[ESC]
```

Fig. 2-13

↓

Press [B]

↓

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************** ELECTRIC VOLUME ****************
**********************************************
  [1]   SENSOR DRIVE VOLTAGE
  [2]   CDS OFFSET
  [3]   SENSOR DRIVE PULSE & SUB VOLTAGE
  [5]   CDS SAMPLING PULSE
  [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [5] or [ESC]
```

Fig. 2-14

—— ADJUSTMENT PARTS LOCATION ——

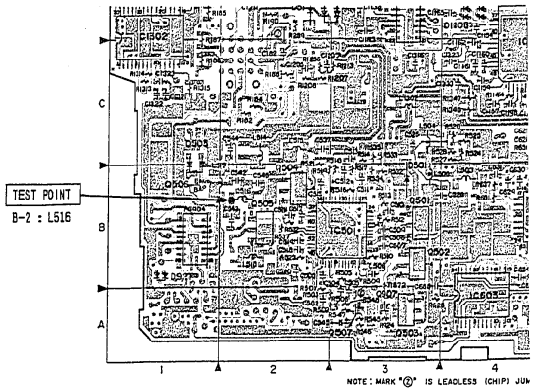


Fig. 2-15 Main Circuit Board (B Side)

(1) Sensor Drive Voltage Adjustment (Fig. 2-15)

PURPOSE	·To measure the supply voltage of the CCD sensor.
INCOMPLETED PHENOMENON	·The CCD sensor output level drops and the picture is distorted.
TEST POINT	·L0516 MAN ·JX200-9 (GND : Black lead of DSP Output jig)
EQUIPMENT/JIG	·DVM
CONDITION	·Remove the camera block in advance.

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************** ELECTRIC VOLUME ****************
**********************************************
  [1]   SENSOR DRIVE VOLTAGE
  [2]   CDS OFFSET
  [3]   SENSOR DRIVE PULSE & SUB VOLTAGE
  [5]   CDS SAMPLING PULSE
  [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [5] or [ESC]
```

↓

Press [1] key to select the SENSOR DRIVE VOLTAGE.

↓

```
<< ADJUSTMENT OF SENSOR DRIVE VOLTAGE >>
SET VOLTAGE OF L0516 AT 15 (+/- 0.1) V.
[U]       UP
[D]       DOWN
[ENTER]   SAVE & RETURN TO MENU
[ESC]     QUIT
```

↓

Press the [U] and [D] keys to set the voltage to 15V ± 0.1V.

↓

Press [ENTER] key, and the display changes as follows.

↓

```
<< ADJUSTMENT OF SENSOR DRIVE VOLTAGE >>
FINISHED WRITING DATA.
ADJUSTMENT FINISHED.
PRESS ANY KEY
```

↓

Press any key to return to ELECTRIC VOLUME ADJ. MENU.

(2) CDS Offset Adjustment

PURPOSE	·To determine the DC offset levels when the AGC is set to the minimum and maximum gains.
INCOMPLETED PHENOMENON	·When a subject is illuminated brightly in low lighting, a white band appears across the top of the screen.
TEST POINT	——
EQUIPMENT/JIG	——
CONDITION	——

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************** ELECTRIC VOLUME ****************
**********************************************
  [1]   SENSOR DRIVE VOLTAGE
  [2]   CDS OFFSET
  [3]   SENSOR DRIVE PULSE & SUB VOLTAGE
  [5]   CDS SAMPLING PULSE
  [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [5] or [ESC]
```

↓

Press [2] key to select the CDS OFFSET.

↓

```
<< ADJUSTMENT OF CDS OFFSET >>
PLEASE WAIT AROUND 50 SEC.
```

↓

```
<< ADJUSTMENT OF CDS OFFSET >>
FINISHED WRITING DATA.
ADJUSTMENT FINISHED.
PRESS ANY KEY
```

↓

Press any key to return to ELECTRIC VOLUME ADJ. MENU.

(3) Sensor Drive Pulse and Sub Voltage Adjustment

PURPOSE	·To determine the level of the pulse output from the CCD sensor. To determine the bias voltage of the CCD sensor.
INCOMPLETED PHENOMENON	·No picture. ·No colour. ·Rough picture. ·Smear occurs.
TEST POINT	———
EQUIPMENT/JIG	———
CONDITION	·Point the camera at the light box without a chart to full the screen (at wide-angle).

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**************************************************
********** ELECTRIC VOLUME **********
**************************************************
  [1]   SENSOR DRIVE VOLTAGE
  [2]   CDS OFFSET
  [3]   SENSOR DRIVE PULSE & SUB VOLTAGE
  [5]   CDS SAMPLING PULSE
  [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [5] or [ESC]
```

Press [3] key to select the SENSOR DRIVE PULSE & SUB VOLTAGE.

```
<< ADJUSTMENT OF SUB VOLTAGE &
                    SENSOR DRIVE PULSE >>
          << NOW ADJUSTING >>
```

```
<< ADJUSTMENT OF SUB VOLTAGE &
                    SENSOR DRIVE PULSE >>
FINISHED WRITING DATA.
ADJUSTMENT FINISHED.
PRESS ANY KEY.
```

Press any key to return to ELECTRIC VOLUME ADJ. MENU.

(4) CDS Sampling Pulse Adjustment

PURPOSE	·To suppress noise in the CCD sensor output signal and maximize the signal level.
INCOMPLETED PHENOMENON	·Diagonal beats and horizontal noise occur.
TEST POINT	———
EQUIPMENT/JIG	———
CONDITION	·Leave the camera/recorder for more than 2 minutes untill the circuits are stabilized after turing it on, then start adjustment.

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**************************************************
********** ELECTRIC VOLUME **********
**************************************************
  [1]   SENSOR DRIVE VOLTAGE
  [2]   CDS OFFSET
  [3]   SENSOR DRIVE PULSE & SUB VOLTAGE
  [5]   CDS SAMPLING PULSE
  [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [5] or [ESC]
```

Press [5] key to select the CDS SAMPLING PULSE.

```
<< ADJUSTMENT OF CDS SAMPLING PULSE >>
          << NOW ADJUSTING >>
```

```
<< ADJUSTMENT OF CDS SAMPLING PULSE >>
FINISHED WRITING DATA.
ADJUSTMENT FINISHED.
PRESS ANY KEY !
```

Press any key to return to ELECTRIC VOLUME MENU.

7-5. Digital Adjustment Procedure

◆Before Starting Adjustment

• When EEP ROM or the main circuit board is replaced, initialize the EEP ROM, referring to "7-3 Initial Setting By Model" then perform all the digital adjustments.

◆Caution when adjustment

Caution: Perform auto iris adjustment [1. AUTO IRIS CONTROL] and knee adjustment [2. KNEE] in the following order.

① Auto Iris Adjustment (Perform the following autofocus adjustment if "ADJUSTMENT OF HALL CURVE" is not completed).
② Zoom Trace Adjustment in AUTOFOCUS ADJUSTMENT PROCEDURE.
③ AF Noise Level Adjustment in AUTOFOCUS ADJUSTMENT PROCEDURE.
④ Auto Iris Adjustment (All three items, "ADJUSTMENT OF IRIS OPEN & CLOSE", "ADJUSTMENT OF IRIS" and "ADJUSTMENT OF HALL CURVE" should be complete).
⑤ Knee Adjustment.

NOTE: If an old light box is used, this adjustment may not be done. Use the following procedure to adjust without using a light box.
·Illuminate a white sheet of paper using an appropriate light source of 2,000-2,500lux (a halogen light of 3,200K is desirable).
·Point the camcoder at the illuminated white sheet of paper to fill the screen as far as possible (at wide-angle).
·Adjust the distance between the camcoder and white sheet of paper so that no error message appears.

—— PRROCEDURE ——

1) Start the MAP.

2) Press [C] to select ADJUSTMENT. (Figs. 2-16, 2-17)

3) Select the number of the required adjustment.

—— NOTE ——

1. If [ESC] (escape) is pressed, the computer's display returns to Fig. 2-16 (MAIN MENU).
2. To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

MAIN MENU

```
**************************************************
********** MANUAL ADJUSTMENT PROGRAM **********
**************************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 2-16

Press [C]

ADJUSTMENT MENU

```
**************************************************
********** ADJUSTMENT **********
**************************************************
          [1]   AUTO IRIS CONTROL
          [2]   KNEE
          [3]   MATRIX
          [4]   WHITE BALANCE
          [5]   CHROMA GAIN
          [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Fig. 2-17

(1) Auto Iris Control Adjustment

• Perform this adjustment, following the order described in "◆Caution When Adjustment" on the previous page.	
PURPOSE	·To set the iris control data.
INCOMPLETED PHENOMENON	·The picture becomes too bright. ·The picture becomes too dark.
TEST POINT	————
EQUIPMENT/JIG	————
CONDITION	·Point the camera at the light box without a chart to full the screen (at wide-angle).

PROCEDURE

ADJUSTMENT MENU

```
**************************************************
*************** ADJUSTMENT *********************
**************************************************
        [1]   AUTO IRIS CONTROL
        [2]   KNEE
        [3]   MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [1] key to select the AUTO IRIS CONTROL.

```
<<ADJUSTMENT OF IRIS OPEN & CLOSE>>
PLEASE WAIT AROUND 10 SEC.
```

```
<<ADJUSTMENT OF IRIS OPEN & CLOSE>>
PLEASE WAIT AROUND 10 SEC.
DATA WRITEN INTO EEPROM
ADJUSTMENT FINISHED
PRESS ANY KEY
```

Press any key, and the display changes as follows.

```
<< ADJUSTMENT IRIS >>
PLEASE WAIT AROUND 20 SEC.
```

— ※1 —

```
<< ADJUSTMENT IRIS >>
PLEASE WAIT AROUND 20 SEC.
ROUGH ADJUSTMENT     : XX TIMES
FINE ADJUSTMENT      : XX TIMES
ADJUSTMENT FINISHED
PRESS ANY KEY
```

(B)

(B)

Press any key, and the display changes as follows.

```
<< ADJUSTMENT OF HALLCURVE >>
PLEASE WAIT AROUND 30 SEC.
PAL SECAM
```

— ※2 —

```
<< ADJUSTMENT OF HALLCURVE >>
PLEASE WAIT AROUND 30 SEC.
PAL SECAM
*
ADJUSTMENT POINT 0 1 2 3 4 5 6 7 8 9 A B C
```

```
<< ADJUSTMENT OF HALLCURVE >>
PLEASE WAIT AROUND 30 SEC.
PAL SECAM
* * * * * * * * * * * * * * *
ADJUSTMENT POINT 0 1 2 3 4 5 6 7 8 9 A B C
DATA WRITEN INTO EEPROM
ADJUSTMENT FINISHED
PRESS ANY KEY
```

Press any key, and the display changes as follows.

```
ADJUSTMENT FINISHED
PRESS ANY KEY
```

Press any key to return to ADJUSTMENT MENU.

— NOTE —

1. With some units the following parameter may not be displayed in the display marked ※1. This is normal; continue adjustment.
   ROUGH ADJUSTMENT: XX TIMES
2. The * mark flashes above the numerals and letters in sequence in the display marked ※2.

(2) Knee Adjustment (Fig. 2-18)

• Perform this adjustment, following the order described in "◆Caution When Adjustment" on the page before the previous page.	
PURPOSE	·To determine the knee level.
INCOMPLETED PHENOMENON	·Colour in the very bright section is defective.
TEST POINT	·Video Out (AV OUT)
EQUIPMENT/JIG	·Oscilloscope (Waveform Monitor)
CONDITION	·Point at a gray scale chart.

PROCEDURE

ADJUSTMENT MENU

```
**************************************************
*************** ADJUSTMENT *********************
**************************************************
        [1]   AUTO IRIS CONTROL
        [2]   KNEE
        [3]   MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [2] key to select the KNEE.

```
**** KNEE ADJUSTMENT ****  STEP 1
* THIS ADJUSTMENT ONLY NEEDED
        AFTER REPLACING IC1101 OR IC1107. *
* THE [1] IRIS CONTROL ADJUSTMENT
        SHOULD HAVE JUST BEEN COMPLETED
  BEFORE PERFORMING THE FOLLOWING KNEE
                ADJUSTMENT PROCEDURE. *

PLEASE POINT AT THE CHART AND
                PRESS THE FOLLOWING KEY
RETURN TO MENU    [ESC]
GO TO NEXT STEP   [ENTER]
```

Press [ENTER] key to start the next step.

```
*** KNEE ADJUSTMENT ***  STEP 1
*** WAIT A MOMENT ***
```

(C)

(C)

```
**** KNEE ADJUSTMENT ****  STEP 2
SET LUMINANCE LEVEL TO
      100 (+/- 5) IRE OR 715 (+/- 35) mV
ROUGH ADJUSTMENT
[U]              UP
[D]              DOWN
FINE ADJUSTMENT
[Ctrl] + [U]     UP
[Ctrl] + [D]     DOWN
[ENTER]          DECISION
```

Press the [U] and [D] keys to set the amplitude level to around 715mVp-p.
Press the [Ctrl] key and hold it down, then press the [U] and [D] keys to adjust the amplitude level to 715mVp ± 35mVp-p.

Press [ENTER] key to start the next step.

```
**** KNEE ADJUSTMENT ****  STEP 3
ADJUST THE LUMINANCE LEVEL TO
            MATCH THE LEVEL FROM STEP 2
ROUGH ADJUSTMENT
[U]              UP
[D]              DOWN
FINE ADJUSTMENT
[Ctrl] + [U]     UP
[Ctrl] + [D]     DOWN
[C]              REREAD THE LEVEL FROM STEP 2
[ENTER]          DECISION
```

Press the [U] and [D] keys to bring the amplitude level near to the level in step 2.
Press the [Ctrl] key and hold it down, then press the [U] and [D] keys to match the amplitude level to that in step 2.

Press the [C] key. The level in step 2 can be checked.

```
**** KNEE ADJUSTMENT ****  STEP 3
WAVEFORM ON OSCILLOSCOPE IS NOW
DISPLAYING AMPLITUDE AS SET IN STEP 2
(PRESS C TO RETURN TO STEP 3 MENU)
```

(D)

(D)

Press [ENTER] key, and the display changes as follows.

WRITING EEPROM NOW

*** KNEE ADJUSTMENT ***
END
PRESS ANY KEY

Press any key to return to ADJUSTMENT MENU.

Waveforms

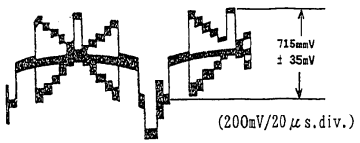


Fig. 2-18

(3) Matrix Adjustment (Fig. 2-19)

PURPOSE	To compensate for uneveness in the chroma signal.
INCOMPLETED PHENOMENON	Colour reproduction becomes defective.
TEST POINT	·Video Out (AV OUT)
EQUIPMENT/JIG	·Oscilloscope
CONDITION	·Point at a colour bar chart.

PROCEDURE

ADJUSTMENT MENU

```
**********************************************
*************** ADJUSTMENT *******************
**********************************************
        [1]   AUTO IRIS CONTROL
        [2]   KNEE
        [3]   MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

(E)

(E)

Press [3] key to select the MATRIX.

```
<< ADJUSTMENT OF BLUE MATRIX >>
ROUGH ADJUSTMENT
[U]              UP
[D]              DOWN
FINE ADJUSTMENT
[Ctrl] + [U]     UP
[Ctrl] + [D]     DOWN
[ENTER]          RETURN TO MENU
[ESC]            QUIT
```

Press the [D] key to minimize the yellow (YEL) level. Press the [U] key so the ratio between yellow (YEL) and blue (BLU) levels is 6:7
Press the [Ctrl] key and hold it down, then press the [U] and [D] keys so the ratio between yellow (YEL) and blue (BLU) levels is 6:7

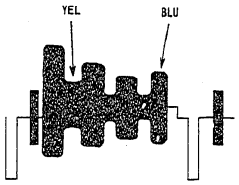
Press [ENTER] key, and the display changes as follows.

DATA WRITING TO EEPROM

ADJUSTMENT FINISHED
PRESS ANY KEY

Press any key to return to ADJUSTMENT MENU.

Waveforms



YEL : BLU
6 : 7

(200mV/50μs.div.)

Fig. 2-19

(4) White Balance Adjustment

PURPOSE	To set white balance under the colour temperature which becomes a reference for the auto white balance circuit.
INCOMPLETED PHENOMENON	·Colour of the subject is different from that of the picture. ·A white subject is not seen as white.
TEST POINT	·Video Out (AV OUT)
EQUIPMENT/JIG	———
CONDITION	·Attach a C12 filter. ·Point at a gray scale chart (at wide-angle).

PROCEDURE

ADJUSTMENT MENU

```
**********************************************
*************** ADJUSTMENT *******************
**********************************************
        [1]   AUTO IRIS CONTROL
        [2]   KNEE
        [3]   MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [4] key to select the WHITE BALANCE.

WHITE BALANCE ADJUSTMENT
INPUT DATA OF OFFSET (TYPE X) FOR R-B --> 00

TYPE_B: Press [1] [4] to input the data.

Press [ENTER] key, and the display changes as follows.

(F)

(F)

WHITE BALANCE ADJUSTMENT
INPUT DATA OF OFFSET (TYPE X) FOR Mg-G --> 00

TYPE_B: Press [0] [0] to input the data.

Press [ENTER] key, and the display changes as follows.

WHITE BALANCE ADJUSTMENT
PLEASE WAIT A MOMENT

WHITE BALANCE ADJUSTMENT
ADJUSTMENT COMPLETED.
COMPLETED EEPROM WRITING.
PRESS ANY KEY

Press any key to return to ADJUSTMENT MENU.

(5) Chroma Gain Adjustment (Figs. 2-20, 2-21)

PURPOSE	To set the colour saturation under the reference colour temperature.
INCOMPLETED PHENOMENON	·Colour of the picture is denser than that of the subject. ·Colour of the picture is lighter than that of the subject.
TEST POINT	·Video Out (AV OUT)
EQUIPMENT/JIG	·Oscilloscope (Vectorscope)
CONDITION	·Attach a C12 filter. ·Point at a colour bar chart.

PROCEDURE

ADJUSTMENT MENU

```
**************************************************
*************** ADJUSTMENT ***********************
**************************************************

        [1]    AUTO IRIS CONTROL
        [2]    KNEE
        [3]    MATRIX
        [4]    WHITE BALANCE
        [5]    CHROMA GAIN
        [ESC]  RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [5] key to select the CHROMA GAIN.

```
<< ADJUSTMENT OF CHROMA GAIN >>

ROUGH ADJUSTMENT
[U]              CHROMA GAIN UP
[D]              CHROMA GAIN DOWN

FINE ADJUSTMENT
[Ctrl] + [U]     CHROMA GAIN UP
[Ctrl] + [D]     CHROMA GAIN DOWN

[ENTER]          SAVE & RETURN TO MENU
[ESC]            QUIT
```

<WHEN USING AN OSCILLOSCOPE>

Press the [U] and [D] keys to set the red level to around 400mVp-p.
Press the [Ctrl] button and hold it down, then press the [U] and [D] keys so the red level is 400mV ± 20mVp-p. (Fig. 2-20)

(G)

(G)

<WHEN USING A VECTORSCOPE>

Press the [U] and [D] keys to set the red vector to around 140% of the burst.
Press the [Ctrl] button and hold it down, then press the [U] and [D] keys so the red vector is 140% ± 5%. (Fig. 2-21)

Press [ENTER] key, and the display changes as follows.

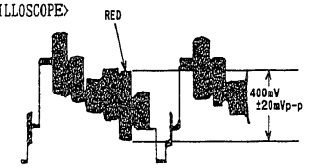
```
DATA WRITING EEPROM

ADJUSTMENT FINISHED
PRESS ANY KEY
```

Press any key to return to ADJUSTMENT MENU.

Waveforms

<OSCILLOSCOPE>



(100mV/20 μs.div.)

Fig. 2-20

<VECTORSCOPE>

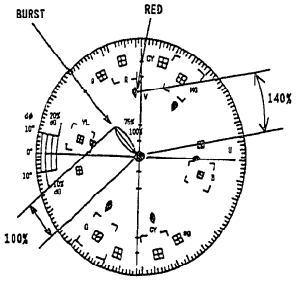


Fig. 2-21

7-6. Autofocus Adjustment Procedure

◆Before Starting Adjustment

- Be sure to perform this adjustment after replacing or initializing the lens block, parts in the autofocus circuit and main circuit board (EEP ROM).

—— PROCEDURE ——

1) Start the MAP.

2) Press [D] to select AUTO FOCUS. (Figs. 2-22, 2-23.)

3) Select the number of the required adjustment.

—— NOTE ——

1. If [ESC] (escape) is pressed, the computer's display returns to Fig. 2-22 (MAIN MENU).
2. To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

MAIN MENU

```
**************************************************
********* MANUAL ADJUSTMENT PROGRAM **************
**************************************************

          [A]    DATA INITIALIZE
          [B]    ELECTRIC VOLUME
          [C]    ADJUSTMENT
          [D]    AUTO FOCUS
          [E]    VCR ADJUSTMENT
          [F]    EIS
          [G]    SPOT NOISE
          [ESC]  END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 2-22

Press [D]

AF ADJ. MENU

```
**************************************************
*********** AUTO FOCUS ADJUSTMENT ****************
**************************************************

      [1]    ADJUSTMENT OF ZOOM/FOCUS TRACKING
      [2]    ADJUSTMENT OF AF NOISE LEVEL
      [ESC]  RETURN TO MENU
        Please select [1], [2] or [ESC]
```

Fig. 2-23

(1) Zoom Trace Adjustment

PURPOSE	·To set the out-of-focus correction level during zooming.
INCOMPLETED PHENOMENON	·Focus is lost during zooming.
EQUIPMENT/JIG	·Colour Video Monitor ·Backfocus Chart
TEST POINT	·Video Out (AV OUT)
CONDITION	·Point at the backfocus chart, 1500±5 mm away from the lens surface. ·Light the chart with 200-400 lux.

CAUTION WHEN ADJUSTMENT

1. Measure the distance between the chart and lens surface precisely.
2. Place the chart as parallel as possible to the lens surface.
3. The backfocus chart should always be at the centre of the monitor screen when the zoom is set to the wide-angle and telephoto ends.
4. The zoom trace adjustment procedure is completed within 2 minutes after it is selected.
5. Do not place any obstruction between the lens and chart during adjustment.

PROCEDURE

AF ADJ. MENU

```
**************************************************
*********** AUTO FOCUS ADJUSTMENT ****************
**************************************************

      [1]    ADJUSTMENT OF ZOOM/FOCUS TRACKING
      [2]    ADJUSTMENT OF AF NOISE LEVEL
      [ESC]  RETURN TO MENU
        Please select [1], [2] or [ESC]
```

Press [1] key to select ADJUSTMENT OF ZOOM/TRACE TRACKING

<CAMERA INIT.>

(OMISSION)

```
ADJUSTMENT OF ZOOM/FOCUS TRACKING CURVE STARTED
ADJUSTMENT OF ZOOM/FOCUS TRACKING CURVE COMPLETED
            PRESS ANY KEY
```

Press any key to return to AF ADJ. MENU.

Turn the power off and then on again.

(2) AF Noise Level Adjustment

PURPOSE	·To set the noise level.
INCOMPLETED PHENOMENON	·It takes time until a subject is brought into focus.
EQUIPMENT/JIG	·Correct focus is not obtained. ·Colour Video Monitor
TEST POINT	·Video Out (AV OUT)
CONDITION	·Set the focus to AUTO. ·Point at a light box without a chart inserted at a distance of up to 10cm.
CAUTION WHEN ADJUSTMENT	
1. Place the light box as parallel as possible to the lens surface. 2. The AF noise level adjustment procedure will be completed within thirty seconds after it is selected.	

PROCEDURE

AF ADJ. MENU

```
**********************************************
*********** AUTO FOCUS ADJUSTMENT ************
**********************************************

    [1]   ADJUSTMENT OF ZOOM/FOCUS TRACKING
    [2]   ADJUSTMENT OF AF NOISE LEVEL
    [ESC] RETURN TO MENU

      Please select [1], [2] or [ESC]
```

↓

Press [2] key to select ADJUSTMENT OF AF NOISE LEVEL.

↓

```
<CAMERA INIT.>
```

↓

```
<ADDRESS INIT.>
```

↓

```
ADJUSTMENT OF NOISE LEVEL STARTED
PLEASE WAIT MOMENT
```

↓

```
ADJUSTMENT OF NOISE LEVEL STARTED
PLEASE WAIT MOMENT
ADJUSTMENT OF NOISE LEVEL COMPLETED
PRESS ANY KEY
```

↓

Press any key to return to AF ADJ. MENU.

↓

Turn the power off and then on again.

7-7. Stabilizer Adjustment Procedure

◆Before Starting Adjustment

- Be sure to perform this adjustment after replacing or initializing the V. gyro, H. gyro circuit boards (gyros) and main circuit board (EEPROM).
- This item describes how to rewrite the stabilizer data. The average of the stabilizer data will be written.

—— PROCEDURE ——

1) Start the MAP.

—— NOTE ——

1. If [ESC] (escape) is pressed, the computer's display returns to MAIN MENU.
2. To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

2) Press [F] to select EIS.

3) Press [Y] key.

—— NOTE ——

1. If [N] is pressed, the computer's display returns to MAIN MENU.
2. If a key other than [Y] or [N] is pressed, "PLEASE SELECT (Y/N)?" is displayed.

4) The stabilizer data is rewritten automatically.

5) Press any key to return to MAIN MENU.

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM **********
**********************************************

          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

↓

Press [F]

↓

```
<<DATA WRITING>>
START TO SEND DATA        (Y/N)
```

↓

Press [Y]

↓

```
FINISHED WRITING DATA.
PRESS ANY KEY
```

↓

Press any key to return to MAIN MENU.

7-8. SPOT NOISE ADJUSTMENT PROCEDURE

◆Before Starting Adjustment

- The spot noise is identified as the fine white noise that appears when the lens cap is attached after the power is turned on.
- Perform this adjustment only for products with which spot noise occurs. (However, there is no problem even if products free from spot noise are adjusted.)
- After replacing the CCD image sensor or sensor/process circuit board (EEPROM), check whether or not spot noise occurs and then proceed with adjustment.

—— PROCEDURE ——

1) Start the MAP.

—— NOTE ——

1. If ESC (escape) is pressed, the computer's display returns to MAIN MENU.
2. To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camcorder and jig.

2) Cap the lens

3) Connect the color video monitor to video out.

4) Press G key to select SPOT NOISE.

—— NOTE ——

·The adjustment procedure in this item is different depending on the amount of spot noise.

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM **********
**********************************************

          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   BIS
          [G]   SPOT NOISE
          [ESC] END

Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Press G

Note: The amount of spot noise is displayed in place marked ×.

One spot noise

```
**********************************
**** SPOT NOISE COMPENSATE ****
**********************************

A SPOT NOISE FOUND.
PRESS ANY KEY.
```

Much spot noise

```
**********************************
***** SPOT NOISE COMPENSATE ****
**********************************

× SPOT NOISE FOUND
PRESS ANY KEY.
```

Spot noise is not detected (when products free from spot noise are adjusted)

```
**********************************
***** SPOT NOISE COMPENSATE ****
**********************************

CAN NOT FIND THE SPOT NOISE.
PRESS ANY KEY.
```

Press any key to return to MAIN MENU.

Press any key.

H

H

```
**************************************
******** SPOT NOISE COMPENSATE ********
**************************************

CAN YOU SEE THE BLINKING CURSOR ?(Y/N)
```

A cursor blinks in the section where spot noise occurs on the monitor screen.

YES → Press Y key.

NO → Press N key.

```
**********************************************
************ SPOT NOISE COMPENSATE ************
**********************************************

LOOK AT THE CURSOR POINT.
WHILE YOU CAN SEE THE SPOT NOISE, PRESS SPACE KEY.
IF THE SPOT NOISE CLEARS, THEN PRESS ENTER KEY.
```

```
**********************************************
************ SPOT NOISE COMPENSATE ************
**********************************************

THIS SPOT NOISE IS IN THE BLANKING AREA OF TV.

PRESS ANY KEY.
```

Press any key.

Check whether or not spot noise disappears after auto adjustment is completed.
If it does not disappear: Press the space key.
If it disappears : Press the enter key.

There are other occurrences of spot noise.

Spot noise compensation is completed.

```
**************************************
****** SPOT NOISE COMPENSATE ******
**************************************

COMPLETE.

PRESS ANY KEY.
```

Press any key to Return to MAIN MENU.

8. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT PROCEDURE

8-1. CRT EVF Adjustment

Adjustment Parts Locations

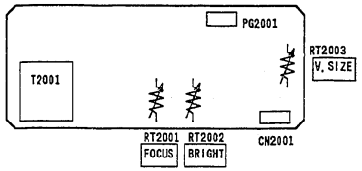


Fig. 2-25 EMQ (Electronic Viewfinder) Circuit Board (Parts Side)

(1) Deflection Yoke Position Adjustment(Fig. 2-24)

PURPOSE	This adjustment procedure eliminates picture tilt in the EVF display.		
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUSTMENT POINTS
·EVF Display		·Aim the resolution chart.	·DEFLECTION YOKE

1) Loosen the deflection yoke nut.
2) Turn the deflection yoke so that the EVF picture (chart) is horizontal, matching the edges of the CRT.

Note: (After adjustment is completed, tighten the deflection yoke nut.)

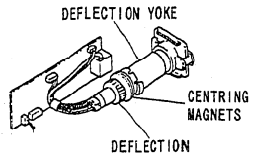


Fig. 2-24

(2) EVF Centring Adjustment (Fig. 2-24)

PURPOSE	This adjustment centres the image observed by the camera in the EVF display.		
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUSTMENT POINTS
·EVF Display		·Aim the resolution chart.	·CENTRING MAGNETS

1) Remove the locking paint from the centring magnet.
2) Adjust the centring magnets until the centre of the picture viewed by the camera is positioned in the centre of the EVF display.

(3) EVF Vertical Size Adjustment (Fig. 2-25)

PURPOSE	This adjustment determines the vertical size of the image appearing in the EVF display.		
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUSTMENT POINTS
·EVF Display		·Aim the resolution chart.	·RT2003 (V.SIZE) EVF

1) RT2003: Set the top and bottom edges of the chart match the top and bottom edges of the CRT.

(4) EVF Brightness Adjustment (Fig. 2-25)

PURPOSE	This adjustment sets the brightness of the picture in the EVF display.		
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUSTMENT POINTS
·EVF Display		·Aim the resolution chart.	·RT2002 (BRIGHT) EVF

1) RT2002: Set to optimize the EVF picture.

(5) EVF Focus Adjustment (Fig. 2-25)

PURPOSE	This control adjusts for optimum focus of the electronic viewfinder picture.		
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS
·EVF Display		·Aim the resolution chart.	·RT2001 (FOCUS) EVF

1) RT2001: Set the EVF picture is clear.

8-2. LCD EVF Adjustment

Adjustment Parts Location

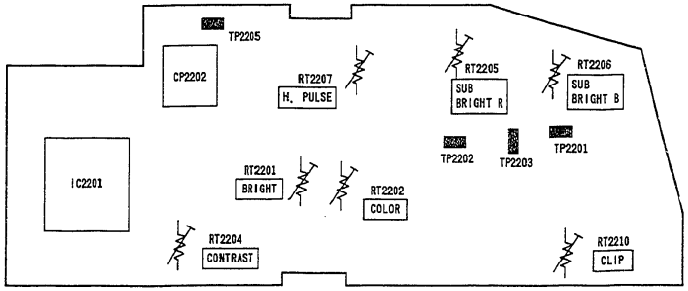


Fig. 2-26 LCD Drive (CRD2) Circuit Board (SIDE-A)

(1) H.Drive Frequency Adjustment (Fig. 2-26)

EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS
·DVM	·TP2205 CRD2	———	·RT2207 (H.PULSE) CRD2

Adjustment Procedure

1) RT2207: Set the DVM reads 2.5V ± 0.1V.

(2) Clip, Brightness, Contrast Adjustment (Fig. 2-26)

EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS
·Osilloscope (DC mode)	·TP2201 CRD2	·Aim at the gray scale chart	·RT2210 (CLIP) CRD2 ·RT2201 (BRIGHT) CRD2 ·RT2204 (CONTRAST) CRD2

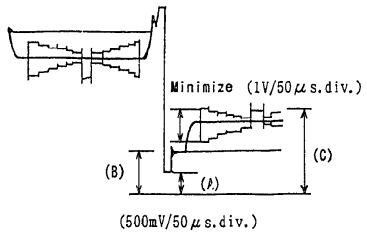
Adjustment Procedure

<CLIP>
1) Adjust RT2201 to minimize the amplitude of the waveform.
2) RT2210: Set the section (A) in the waveform is 1.6±0.1Vp-p.

<BRIGHT>
1) RT2201: Set the section (B) in the waveform is 2.2±0.05Vp-p.

<CONTRAST>
1) RT2204: Set the section (C) in the waveform is 4.4±0.05Vp-p.

Waveforms



(3) Sub-Bright Adjustment (Fig. 2-26)

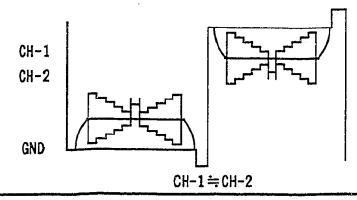
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS
·Osilloscope (DC mode)	·CH-1: TP2201 CRD2 ·CH-2: TP2202 CRD2 TP2203 CRD2	·Aim at the gray scale chart	·RT2206 CRD2 (SUB BRIGHT B) ·RT2205 CRD2 (SUB BRIGHT R)

Adjustment Procedure

<BRIGHT B>
1) Match the OV DC between CH-1 and CH-2
2) RT2206: Match the CH-1 and CH-2 waveforms. If the CH-1 and CH-2 waveforms do not match, shape each waveform.

<BRIGHT R>
1) Match the OV DC between CH-1 and CH-2
2) RT2205: Match the CH-1 and CH-2 waveforms. If the CH-1 and CH-2 waveforms do not match, shape each waveform.

Waveforms



CH-1≒CH-2

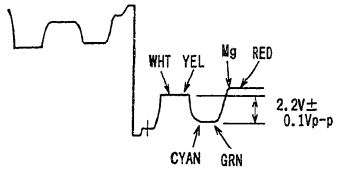
(4) Chroma Gain and Colour Phase Adjustment (Fig. 2-26)

EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS
·Osilloscope	·TP2202 CRD2	·Aim at the colour bar chart (Input the full colour bar signal.)	·RT2202 (COLOUR) CRD2 ·CP2202 CRD2

Adjustment Procedure

1) Adjust CP2202 to minimize the fluctuations the waveform.
2) Adjust RT2202 so the difference in the level between yellow and cyan is 2.2V ± 0.1Vp-p.

Waveforms



(500mV/50μs.div.)

8-3. STA EVF Adjustment

Adjustment Parts Location

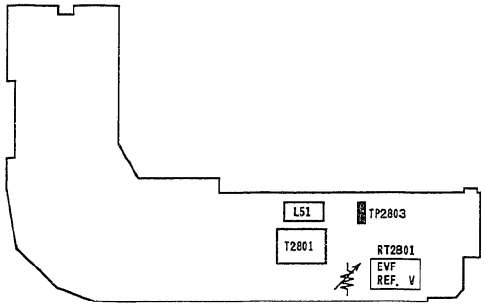


Fig. 2-27 STATION (STA) Circuit Board (SIDE-A)

(1) Output Voltage Adjustment (Fig. 2-27)

EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUSTMENT POINT
·DVM	·TP2803 STA	——	·RT2801 STA (EVF REF.V)

Adjustment Procedure

1) RT2801: Set the voltage of TP2803 to 13.5±0.1V

3. VCR SECTION ADJUSTMENT

1. CIRCUIT BOARD LOCATIONS

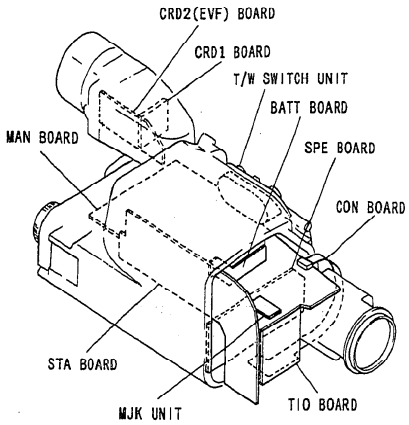


Fig. 3-1

2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT

1) Test Equipment
- Oscilloscope (dual trace)
- Digital Voltmeter (DVM)
- Frequency Counter
- Millivoltmeter
- Colour Video Monitor
- Colour Bar Generator
- C/R Oscillator

2) Alignment Tape, etc.
- Adjustment Floppy Disk
- Personal Computer
- Personal Computer 9-pin or 25-pin (RS232C) Cable
- DSP-R Jig
- DSP AV Output Cable
- Alignment Tape (20HSC-3)
- Blank Tape
- ATF-R Jig
- DC Power Supply (DC 0~8V/3A)
- DC Power Supply (DC 5V/1A)

3. ADJUSTMENT CONDITION

1) Check that the camera section has been adjusted correctly before adjusting the VCR section.
2) Connect this unit, a power supply and a colour video monitor as shown in Fig. 1-1.
3) Use the 10:1 probe of the oscilloscope when other not specified.
4) When "Record mode" is specified, load a blank tape and set the 8mm video camera/recorder to the record mode by the following procedure.
   ① Set the CAMERA/OFF/VIDEO switch to the CAMERA position.
   ② Press the REC START/STOP button on the unit (or REC START/STOP button on the remote control).
5) Before adjusting the resistors marked with asterisks (*) in the following text, remove the corresponding laser trimming resistors to replace them with the specified semi-variable resistors.
6) Before unsoldering laser trimming resistors be sure to confirm each adjustment value. Remove only the resistors used in the adjustment items that should be adjusted.
7) Earth of test equipment: Pre-Amp Shield (GND).

4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

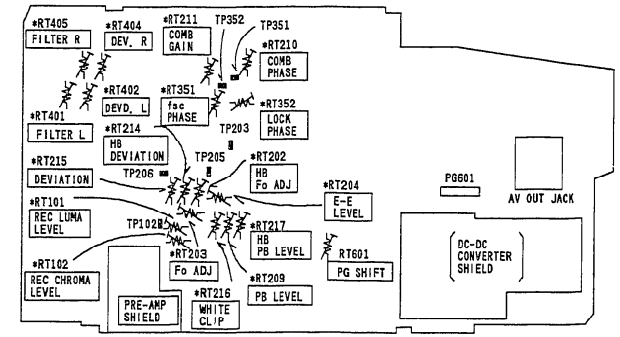
- CAMERA/OFF/VIDEO switch ..... "VIDEO" position
- TITLE ..... Not Display mode

The video and audio signals can be input to a model without the AV input function in the following.

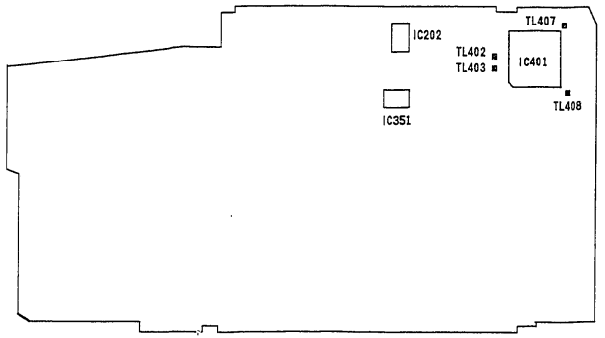
NOTE: The following methods are used for adjustment and checking. Do not use them for any purposes other than adjustment or checking.

- Modify the AV input cable. Change the connection of pin 13 of the AV input cable from ground to pin 2 (DC5V). (After checking that pin 13 and ground are not connected, connection of pin 13 to pin 2(DC5V)).

5. ADJUSTMENT COMPONENTS LOCATIONS



SIDE A



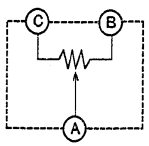
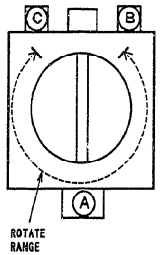
SIDE B

NOTE
- Variable resistors marked "*" are laser trimming resistor.
- Test point (TP) are not actually provided on the circuit board.

Fig. 3-2 Main (MAN) Circuit Board

Table. 3-1 SEMI-VARIABLE RESISTORS TABLE

TYPE	ADJUST POINT	SEMI-VARIABLE RESISTOR (Ω)	Chip Jumper	CIRCUIT BOARD	Name of Adjustment
A	RT101	1K	RO174(1608)	MAN	REC LUMA LEVEL
	RT102	2.2K	RO175(1608)		REC CHROMA LEVEL
B	RT202	10K	———		HB Fo ADJ
	RT203	22K			Fo ADJ
	RT204	10K			E-E LEVEL
	RT209	10K			PB LEVEL
	RT210	10K			COMB PHASE
	RT211	4.7K			COMB GAIN
	RT214	4.7K			HB DEVIATION
	RT215	10K			DEVIATION
	RT216	22K			WHITE CLIP
	RT217	10K			HB PB LEVEL
	RT351	10K			LOCK PHASE
A	RT352	2.2K	RO176(1608)		fsc PHASE
B	RT401	47K			FILTER L
	RT402	47K			DEV. L
	RT404	47K			DEV. R
	RT405	47K			FILTER R

TYPE	ADJUST THE RANGE	Installation Method
A		1) Remove the laser trimming resistor and remove the resist to increase the area of the land, then attach the specified semi-variable resistor. 2) Attach the specified leadless jumper to the specified land.
B		1) Remove the laser trimming resistor and attach the specified semi-variable resistor.

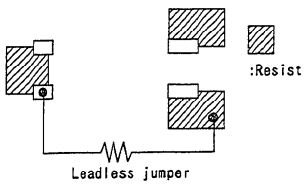


Fig. 3-3 Semi-variable resistors

6. CHECK AFTER REPLACING MAJOR COMPONENTS IN THE VCR SECTION

After replacing major components, perform checks, referring to the table below.
The following table shows the minimum adjustments required after major components are placed.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Note: After replacing the parts, check each adjustment. If you find the items necessary to be adjusted, remove the corresponding laser trimming resistors and replace them with variable resistors for adjustment.

ITEM No.	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS: MAN BOARD	CYLINDER	IC901	IC201	IC202	IC401	IC301
	SYSTEM CONTROL/SERVO CIRCUITS ADJUSTMENT							
(1)	Power Shut Off Level Adjustment	●		●				
(2)	Head Switching Point Adjustment	●	●					
	LUMINANCE/CHROMA CIRCUIT ADJUSTMENT							
(1)	Comb Filter Adjustment				●	●		
(2)	E-E Video Signal Level Adjustment				●			
(3)	White Clip Adjustment				●			
(4)	Carrier Frequency Adjustment				●			
(5)	Deviation Adjustment				●			
(6)	Record Luminance/Chroma level Adjustment				●			
(7)	Playback Luminance Level Adjustment				●			
(8)	Colour Alignment Adjustment				●			●
	AUDIO CIRCUIT ADJUSTMENT							
(1)	Band Pass Filter (BPF) Adjustment						●	
(2)	Deviation Adjustment						●	

7. SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT

◆ Before Starting Adjustment

1: System control adjustment also needs a personal computer. Connect the camera/recorder, jigs, power supply, etc. in the same way as in Digital Adjustment.
2: Be sure to perform this adjustment after replacing or initializing the EEPROM and main circuit board (EEPROM).
3: When an error message appears during adjustment, refer to "4. Error Messages".
4: If [ESC] (escape) is pressed, the computer's display returns to Fig. 3-4 (MAIN MENU).
5: To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

——— PROCEDURE ———

1) Start the MAP.

2) Press [E] to select VCR ADJUSTMENT. (Figs. 3-4, 3-5)

3) Select the number of the required adjustment.

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM **********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E] , [F], [G]
              or [ESC]
```

Fig. 3-4

⇩

Press [E]

⇩

VCR ADJ. MENU

```
**********************************************
*************** VCR ADJUSTMENT ***************
**********************************************
    [1]   ADJUSTMENT OF ODC
    [ESC] RETURN TO MAIN MENU
      Please select [1] or [ESC]
```

Fig. 3-5

(1) Power Shut Off Level (ODC: Over Discharge) Adjustment

PURPOSE	· To set the minimum voltage required to opreate the camera/recorder.
INCOMPLETED PHENOMENON	· The usable time of the battery becomes short. · The camera/recorder doesn't operate normally.

EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·DVM	·PG002-1 (GND) MAN ·PG002-3 MAN	·Load the brank tape ·Supply power (6.5V±0.2V) to PG002-3	
·DC Power Supply (0-8V)	·PG002-1 (GND) MAN ·PG002-3 MAN		
·Blank Tape			

Adjustment Procedure

VCR ADJ. MENU

```
**********************************************
************ VCR ADJUSTMENT ******************
**********************************************
    [1]   ADJUSTMENT OF ODC
    [ESC] RETURN TO MAIN MENU
      Please select [1] or [ESC]
```

⇓

Press [1] key to select the adjustment of ODC.

⇓

```
<< SET UP OF ODC ADJUSTMENT STARTED >>
SET POWER SOURCE AT 5.80 (+/- 0.05) V.
START ADJUSTING.
PRESS ANY KEY.
```

⇓

①

①

⇓

Set the voltage of PG002-3 to 5.80V±0.05V

⇓

Press any key, and the display changes as follows.

⇓

```
SETUP OF ODC ADJUSTMENT COMPLETED
ODC ADJUSTMENT STARTED
FINISHED WRITING DATA
ADJUSTMENT FINISHED
PRESS ANY KEY
```

⇓

Press any key to return to VCR ADJ. MENU.

(2) Head Switching Point Adjustment (Fig. 3-2)

Note: Be sure to perform this adjustment after replacing the cylinder assembly and MAN circuit board.

PURPOSE	· To set the switching point of the video heads during playback.
INCOMPLETED PHENOMENON	· Vertical jitter occurs. · Switching noise appears across the bottom of the monitor screen.

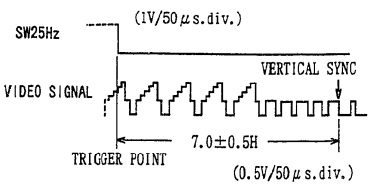
EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Osilloscope	·CH-1: Video Out(A/V out) ·CH-2: TP1(SW30) ATF-R	·Playback the alignment tape.	·RT601 MAN (PG SHIFT)
·ATF-R Jig (SW3: OFF)	·PG601 MAN		
·Alignment tape			

Adjustment Procedure

Vertical sync signal:
Set to 7.0H±0.5H from the trailing edge (trigger position) of the SW25Hz pulse.

<Settings of oscilloscope>
·Trigger with CH-2.
·Set the sync slope to "-"

Waveforms



ENGLISH

8. LUMINANCE/CHROMA CIRCUIT ADJUSTMENT

(1) Comb Filter Adjustment (Fig. 3-2)

PURPOSE	· To set the characteristic of the comb filter.
INCOMPLETED PHENOMENON	· Jamming occurs at the edges. · The chroma S/N deteriorates.

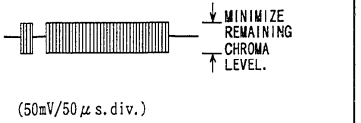
EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Oscilloscope	·TP203 MAIN	·Input the colour bar signal. ·STOP mode	*RT211 MAN (COMB GAIN) *RT210 MAN (COMB PHASE)
·Colour Bar Generater	·Video IN (AV IN)		
·Blank Tape			

Adjustment Procedure

1) Load the blank tape for normal 8.
2) RT210, RT211: Set the Chroma Components to minimize the residual.

<Settings of oscilloscope>
·Trigger with video signal.

Waveforms



(50mV/50μs.div.)

(2) E-E Video Signal Level Adjustment (Fig. 3-2)

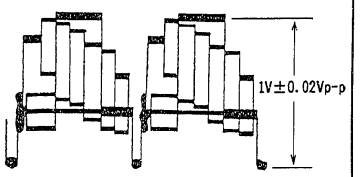
PURPOSE	· To set the video output level in the E-E mode.
INCOMPLETED PHENOMENON	· The picture becomes dark or whitish in the E-E mode.

EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Oscilloscope	·Video Out (AV OUT)	·Input the colour bar signal. ·Stop mode	*RT204 MAN (E-E LEVEL)
·Colour Bar Generator	·Video In (AV IN)		
·Blank Tape			

Adjustment Procedure

1) Load the blank tape for normal 8.
2) RT204: Set the Video output level to 1V±0.02Vp-p

Waveforms



(200mV/20μs.div.)

(3) White Clip Adjustment (Fig. 3-2)

PURPOSE	· To set the white clip level.
INCOMPLETED PHENOMENON	· No colour apperrs in the highly bright subject.

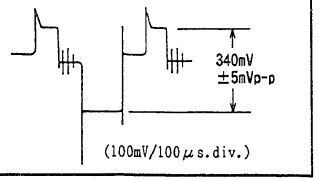
EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Oscilloscope	·TP205 MAN	·Input the colour bar signal. ·Stop mode	*RT216 MAN (WHITE CLIP)
·Colour Bar Generator	·Video IN (AV IN)		
·Blank Tapes			

Adjustment Procedure

1) Load the blank tape for normal 8.
2) RT216: Set the white clip level to 340mV±5mVp-p

<Settings of oscilloscope>
·Trigger with video signal.

Waveforms



(100mV/100μs.div.)

(4) Carrier Frequency Adjustment (Fig. 3-2)

PURPOSE	· To set the modulation frequency at the sync tip of the FM modulator to the specified value.
INCOMPLETED PHENOMENON	· Black and white are inverted in the picture.

EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Oscilloscope ·Colour Bar Generator ·Blank Tapes	·TP206 MAN ·Video In (AV IN)	·Input the white (100%) signal. ·Stop mode.	*RT203 (Fo ADJ) MAN *RT202 (HB Fo ADJ) MAN

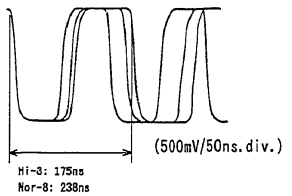
Adjustment Procedure

〈Nor-8〉
1) Load the blank tape for normal 8.
2) RT203: Set the period of the widest pulse is 238ns ± 3ns.

〈Hi-8〉
3) Load the blank tape for Hi-8.
4) RT202: Set the period of the widest pulse is 175ns ± 3ns.

〈Setting of oscilloscope〉
·Trigger the osilloscope internally.

Waveforms



(5) Deviation Adjustment (Fig. 3-2)

PURPOSE	· To set the modulation frequency at the white peak of the FM modulator to the specified value.
INCOMPLETED PHENOMENON	· The picture becomes dark or whitish during recording and playback.

EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Oscilloscope ·Colour Bar Generator ·Blank Tapes	·TP206 MAN ·Video In (AV IN)	·Input the white (100%) signal. ·Stop mode.	*RT215 (DEVIATION) MAN *RT214 (HB DEVIATION) MAN

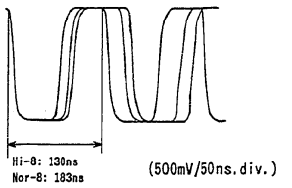
Adjustment Procedure

〈Nor-8〉
1) Load the blank tape for normal 8.
2) RT215: Set the period of the narrowest pulse is 183ns ± 2ns.

〈Hi-8〉
3) Load the blank tape for Hi-8.
4) RT214: Set the period of the narrowest pulse is 130ns ± 2ns.

〈Setting of oscilloscope〉
·Trigger the osilloscope internally.

Waveforms



(6) Record Luminance/Chroma Level Adjustment (Fig. 3-2)

PURPOSE	· To set the luminance and chroma signals to the specified values.
INCOMPLETED PHENOMENON	· The luminance and chroma S/Ns diteriorate. · Cross-beats appear on the monitor screen. · Black and white are inverted in picture.

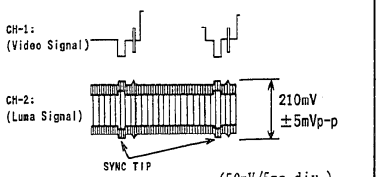
EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Oscilloscope	·CH-1: Video Out (AV OUT) CH-2: TP102 (REC Y) MAN TP103 (REC C) MAN	·Input the colour bar signal.	*RT101 (REC LUMA LEVEL) MAN *RT102 (REC CHROMA LEVEL) MAN
·Colour Bar Generator	·Video In (AV IN)		
·ATF-R Jig (SW3:ON)	·PG601 MAN		
·Blank Tape			

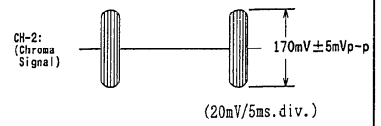
Adjustment Procedure

1) Load the blank tape for Hi-8.
2) Connect the ATF-R jig to PG601 and turn the power off.
3) turn the power switch off and hold the STOP button depressed, then supply power.
4) Set the unit to the loading state.
5) Press the REW button.
<Luminance Level>
6) Set the REC MODE switch to "START/STOP".
7) RT101: Set the sync tip section in record luminance signal is 210mV ± 5mVp-p.
<Chroma Level>
8) Set the REC MODE switch to "HOLD TO REC".
9) RT102: Set the sync burst section in record chroma signal is 170mV ± 5mVp-p.

〈Setting of oscilloscope〉
·Trigger with video signal.

Waveforms





(7) Playback Luminance Level Adjustment (Fig. 3-2)
Note: Perform this adjustment after completing the record luminance/chroma level adjustment.

PURPOSE	· To set the luminance playback level to the specified value.
INCOMPLETED PHENOMENON	· The picture becomes dark or whitish during playback.

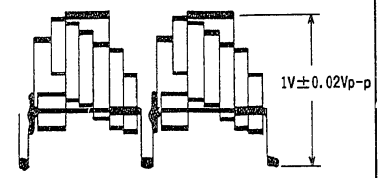
EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Oscilloscope ·Blank Tape (8), (Hi-8) ·Colour Bar Generator	·Video Out (AV OUT)	·Record colour bar signal and play it back with same VCR.	*RT209 (PB LEVEL) MAN *RT217 (HB PB LEVEL) MAN

Adjustment Procedure

〈Nor-8〉
1) RT209: Set the Playback luminance level to 1V±0.02Vp-p

〈Hi-8〉
2) RT217: Set the Playback luminance level to 1V±0.02Vp-p

Waveforms



(8) Colour Alignment Adjustment (Fig. 3-2)

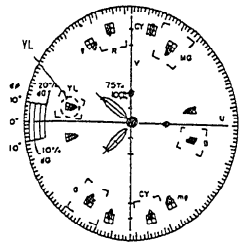
PURPOSE	·To set the tint in the colour alignment circuit.
INCOMPLETED PHENOMENON	·No colour appears during trick play or colour reproduction becomes defective.

EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUSTMENT POINTS
·DC Power Supply (0-8V) ·Vectorscope ·ATF-R Jig (SW3:ON) ·Alignment Tape	·TP352 MAN ·Video out (A/V OUT) ·PG601 MAN	·Play back the alignment tape.	*RT352 (fsc PHASE) MAN *RT351 (LOCK PHASE) MAN

Adjustment Procedure

1) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT)
2) Connect the ATF-R jig to PG601 and turn the power off.
3) Press the FF button and hold it, then set the POWER switch to the VIDEO position so the unit enters the test mode (used exclusively for colour alignment adjustment).
4) Press the PLAY button and playback the alignment tape.
5) Supply power (7V DC) to TP352 via a 1kΩ resistor.
6) Check the YL chroma phase.
7) Press the PLAY button.
8) RT352: Set the VL chroma phase is aligned (± 10 deg.) before and after the PLAY button is pressed.
9) Press the PLAY button.
10) Connect TP352 to ground via a 1kΩ resistor.
11) Check the YL chroma phase.
12) Press the PLAY button.
13) RT351: Set the VL chroma phase is aligned (± 10 deg.) before and after the PLAY button is pressed.

Waveforms



NOTE

When the PLAY button is pressed after the unit is set to the test mode, the unit enters the normal play mode. When the PLAY button is pressed again, the unit enters the colour alignment adjustment mode. Each time the PLAY button is pressed, the unit alternates between the normal play mode and the colour alignment adjustment mode.

9. AUDIO CIRCUIT ADJUSTMENT

Note: Before adjusting the audio circuits, prepare a tape on which 1kHz, -7.8 ± 3dB audio signals are recorded on the L and R channels (referred to as the audio tape hereafter).

(1) Band Pass Filter (BPF) Adjustment (Fig. 3-2)

PURPOSE	· To set the bandpass frequency of the BPF.
INCOMPLETED PHENOMENON	· No audio output.

EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Oscilloscope	·TL403 (L CH) MAN ·TL402 (R CH) MAN ·Audio GND (A/V OUT)	·Playback the Audio Tape	*RT401 MAN (FILTER L) *RT405 MAN (FILTER R)
·ATF-R JIG (SW3:OFF) ·C/R Oscillator	·PG601 MAN		

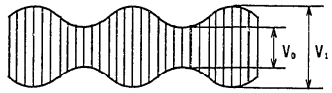
Adjustment Procedure

<L-CH>
1) RT401: Make the waveform as flat as possible and maximize the width of waveform Ⓑ.

<R-CH>
1) RT405: Make the waveform as flat as possible and maximize the width of waveform Ⓑ.

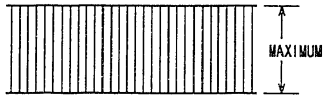
<Settings of oscilloscope>
·Trigger with SW25Hz.

Waveforms



$20\log(V_o/V_i)=0dB\pm2dB$

Ⓐ



Ⓑ

(2) Deviation Adjustment (Fig. 3-2)

PURPOSE	·Set the audio output level.
INCOMPLETED PHENOMENON	·L-channel and R-channel audio levels are different.

EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Millivoltmeter	·TL408 MAN ·TL407 MAN ·Audio GND (AV OUT)	·Playback the Audio Tape.	*RT402 MAN (DEV. L) *RT404 MAN (DEV. R)
·C/R Oscillator			

Adjustment Procedure

<L-CH>
1) Adjust RT402 for -15dB ± 0.5dB.

<R-CH>
2) Adjust RT404 for -15dB ± 0.5dB.

10. TIO CIRCUIT ADJUSTMENT

◆ Caution during adjustment

1. Be careful not to place on obstacle in the path of the infrared light between the camcorder and wireless receiver during adjustment.
2. After replacing IC0001 and RT0001-RT0004, re-adjust them.
3. Be sure to perform adjustments in the following order.

① AUDIO L ▶ ② AUDIO R ▶ ③ VIDEO fo ▶ ④ VIDEO Dev

Connection For Adjustment

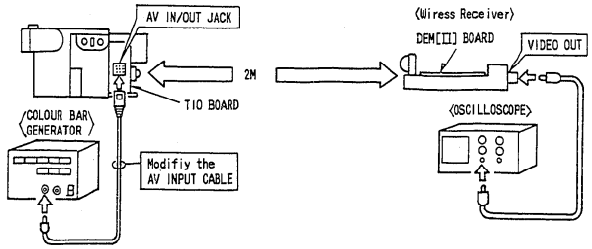


Fig. 3-6 Connection For Adjustment

Adjustment Parts Location

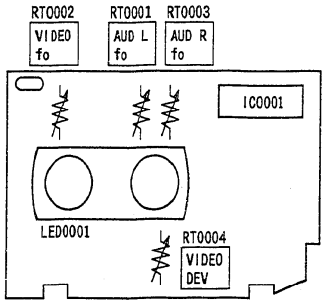


Fig. 3-7 TALLY/IR/OPTICAL(TIO) Circuit Board (SIDE-A)

Test Points Parts Location

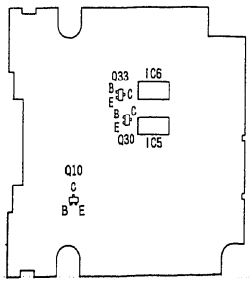


Fig. 3-8 DEM[II] Circuit Board (SIDE-B)

(1) FM Carrier ADJUSTMENT

PURPOSE	· To set the frequencies of the audio and video FM signals in the specified values. · To set the deviation of the video FM signal to the specified value.
INCOMPLETED PHENOMENON	· The picture is distorted. · No sound is output or the level is low. · The sound balance between the left and right channels deteriorates.

EQUIPMENT/JIG	TEST POINTS CONNECTION POINTS	CONDITION	ADJUST POINTS
·Frequency Counter	·Q30-E (AUD L fo) DEM ·Q33-E (AUD R fo) DEM ·Q10-E (VID fo) DEM	·VCR MODE (STOP)	·RT0001 (AUD L fo) TIO ·RT0003 (AUD R fo) TIO ·RT0002 (VID fo) TIO ·RT0004 (VID Dev) TIO
·Oscilloscope	·VIDEO OUT (VID Dev)		
·Colour Bar Generator	·VIDEO IN (AV IN)		
·Wiress Receiver			

Adjustment Procedure

〈AUD L fo〉
1) RT0001: The frequency counter reads 550kHz±30kHz at Q30-E.

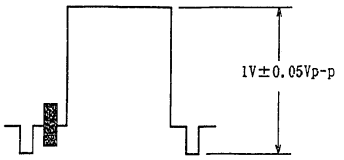
〈AUD R fo〉
1) RT0003: The frequency counter reads 950kHz±30kHz at Q33-E.

〈VID fo〉
1) Use jumper to short RT0004 and GND.
2) RT0002: The frequency caunter reads 11.6MHz±0.5MHz.
3) Remove the short-circuit.

〈VID Dev〉
1) RT0004: Set the video output level to 1V±0.05Vp-p.

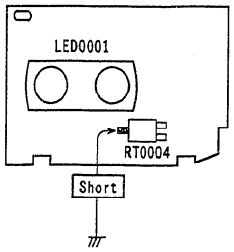
<Setting of oscilloscope>
·Trigger the oscilloscope internally.

Waveforms



(200mV/20μs.div.)

Short Point



4. ERROR MESSAGES

1. Camera Electric Volume and Digital Adjustments

Error Message	Countermeasure
ERROR OCCURRED. IRIS TROUBLE PRESS ANY KEY	• Check whether or not power is supplied. • Check the values of the iris drive circuit. • Defective soldering, damage to pattern, etc. in the above circuit. • Check the iris block and replace it if necessary.
ERROR OCCURRED ON dax ADJUSTMENT PRESS ANY KEY	• Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
D RANGE OVER. ERROR ON dax ADJUSTMENT PRESS ANY KEY	• Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED ON da0 and da1 ADJUSTMENT PRESS ANY KEY	• Check the values in the hall amp circuit and its peripheral circuits. • Defective soldering, damage to pattern, etc. in the above circuits.
FILE NOT FOUND !!!! PRESS ANY KEY	• The adjustment programme (file) cannot be found. • Check the adjustment floppy disk and replace it if necessary.
FILE OPEN ERROR !!!! PRESS ANY KEY	• The adjustment programme (file) does not start. • Check the adjustment floppy disk and replace it if necessary.
ERROR OCCURRED ON C DUTY ADJUSTMENT PRESS ANY KEY	• Check the values of the iris drive circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED ON FDET ADJUSTMENT PRESS ANY KEY	• Supply power again and re-adjust. • Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED. ZOOM DOES NOT WORK PRESS ANY KEY	• Supply power again and re-adjust.
TOO BRIGHT PRESS ANY KEY	• The subject is too bright. • Move the camera further away from the light box.
TOO DARK PRESS ANY KEY	• The subject is too dark. • Check the light box. • Move the camera closer to the light box.
D RANGE OVER ERROR ON HALL AMP IRIS CANNOT OPEN ANY MORE PRESS ANY KEY	• Supply power again and re-adjust. • The subject is too dark. • Check the light box. • Move the camera closer to the light box. • Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.

Error Message	Countermeasure
STAURATION ERROR. TOO BRIGHT PRESS ANY KEY	• The subject is too bright. • Move the camera further away from the light box.
CAN'T ADJUSTMENT WHITE BALANCE PLEASE RETRY PRESS ANY KEY	• The subject is too bright or too dark. • Check the light box. • Move the camera closer to or away from the light box. • Supply power again and re-adjust.

2. Autofocus and Electronic Stabilizer Adjustments

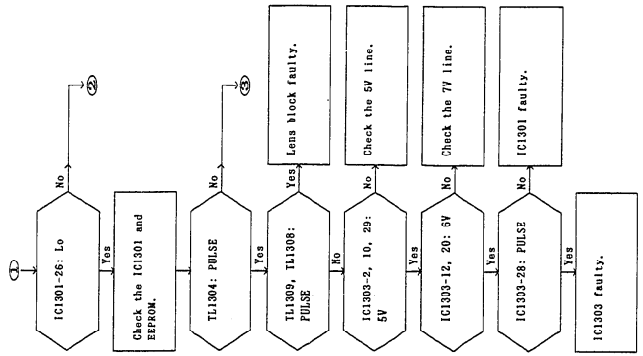
Error Message	Countermeasure
DATA INITIALIZE ERROR	• Error in communications between the DSP μP and autofocus μP. • Check the connections between the DSP μP and autofocus μP.
TIME OUT ERROR ON AF STEP	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (1) of TROUBLESHOOTING OF AUTOFOCUS.
TIME OUT ERROR ON ZOOM	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
CAN'T COMPLETE AF ADJUSTMENT	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
TIME OUT ERROR ON AF ADJUSTMENT	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
AF LIMIT OVER	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
OUT OF RANGE	• Error in communications between the DSP μP and autofocus μP. • Check the connections between the DSP μP and autofocus μP. • The electronic variable resistor adjustment or digital adjustment is incorrect.
CANNOT OPEN THE FILE PRESS ANY KEY	• The EIS adjustment programme does not start. • Check the adjustment floppy disk and replace it if necessary.

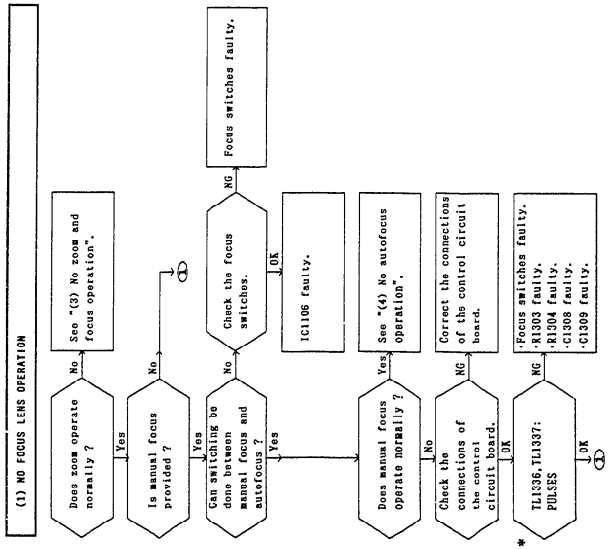
3. VCR Adjustment

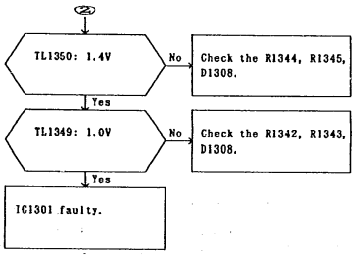
Error Message	Countermeasure
Error : SWP_TEST.DAT FILE NO FOUND !	• The adjustment programme cannot be found. • Check the adjustment floppy disk and replace it if necessary.
ERROR : INVALID MODEL PRESS ANY KEY	• A wrong model has been selected. • The adjustment programme cannot be found. • Check the adjustment floppy disk and replace it if necessary.
THIS MODEL IS NOT NEED THE ADJUSTMENT PRESS ANY KEY	• A wrong model has been selected. • A product that needs analog adjustment is connected.
ADJUSTMENT INCOMPLETED PRESS ANY KEY	• The value set by adjustment defective. • Re-adjust. • Check cylinder. • Check the alignment tape. • Check whether or not the usual operation is done correctly
RETRY ADJUSTING. PRESS ANY KEY	• Supply power again and re-adjust.
CAMERA IS NOT READY	• Check whether or not power is supplied.
INVALID MODEL PRESS ANY KEY	• A wrong model has been selected. • The adjustment programme cannot be found. • Check the adjustment floppy disk and replace it if necessary.

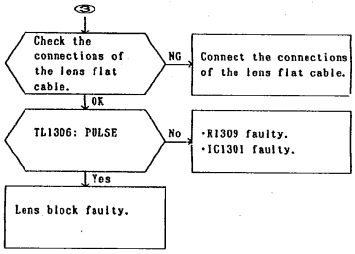
5. TROUBLESHOOTING OF AUTOFOCUS

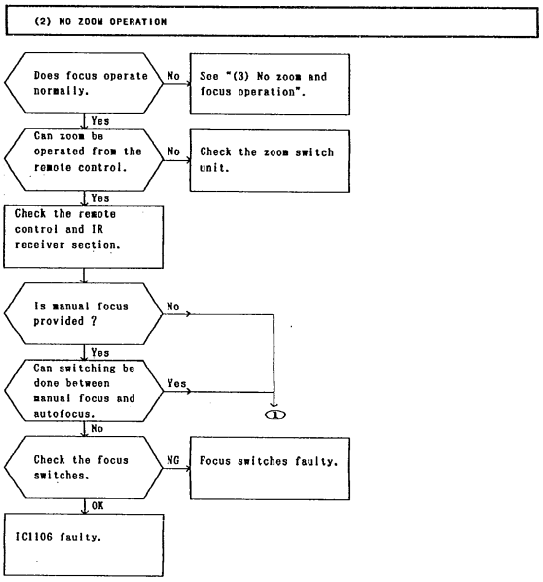
1. Autofocus

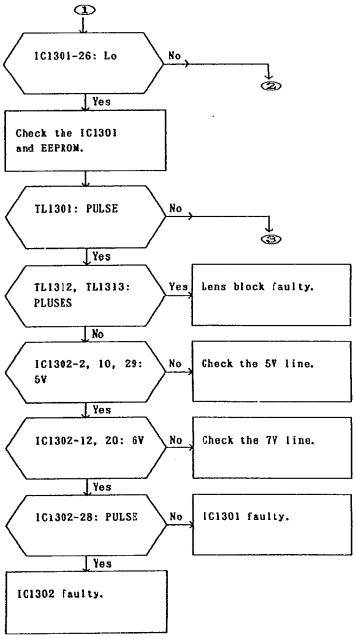


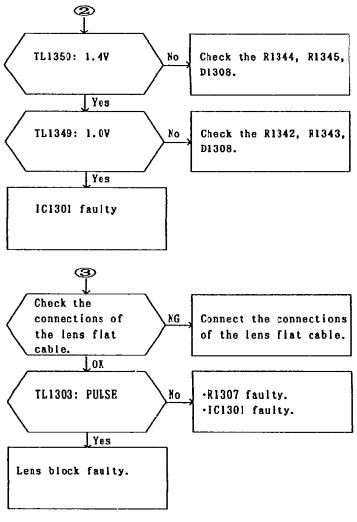



②
TL1350: 1.4V
No
Check the R1344, R1345, D1308.
Yes
TL1349: 1.0V
No
Check the R1342, R1343, D1308.
Yes
IC1301 faulty.

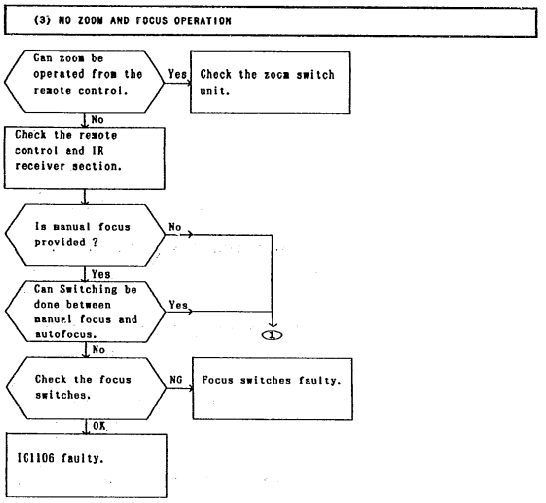

③
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1306: PULSE
No
·R1309 faulty.
·IC1301 faulty.
Yes
Lens block faulty.

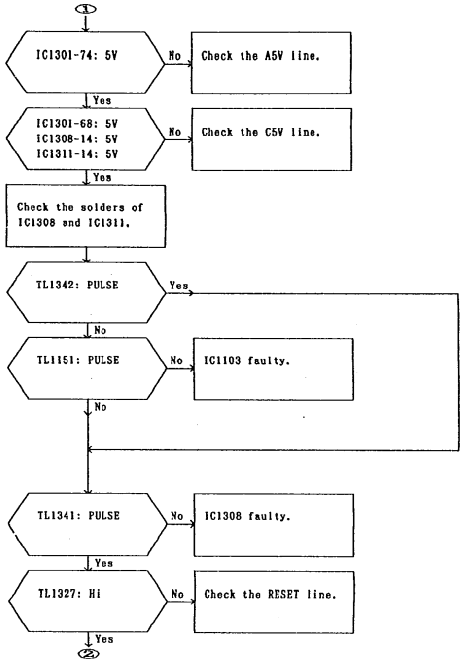

(2) NO ZOOM OPERATION
Does focus operate normally.
No
See "(3) No zoom and focus operation".
Yes
Can zoom be operated from the remote control.
No
Check the zoom switch unit.
Yes
Check the remote control and IR receiver section.
Is manual focus provided ?
No
Yes
Can switching be done between manual focus and autofocus.
Yes
①
No
Check the focus switches.
NG
Focus switches faulty.
OK
IC1106 faulty.

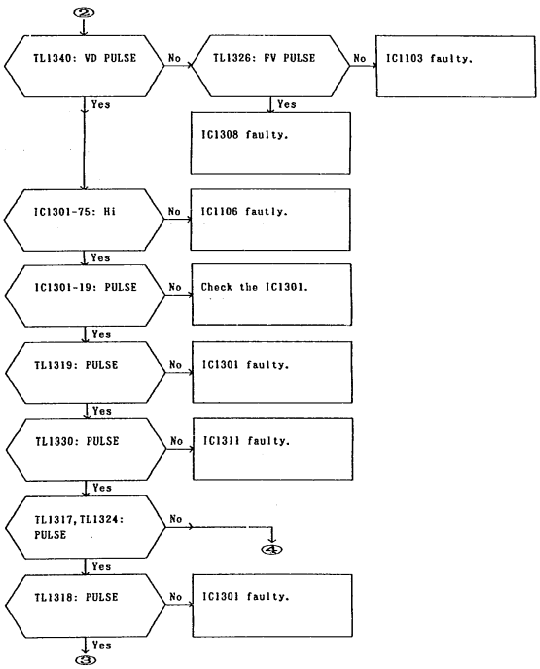

①
IC1301-26: Lo
No
②
Yes
Check the IC1301 and EEPROM.
TL1301: PULSE
No
③
Yes
TL1312, TL1313: PLUSES
Yes
Lens block faulty.
No
IC1302-2, 10, 29: 5V
No
Check the 5V line.
Yes
IC1302-12, 20: 6V
No
Check the 7V line.
Yes
IC1302-28: PULSE
No
IC1301 faulty.
Yes
IC1302 faulty.

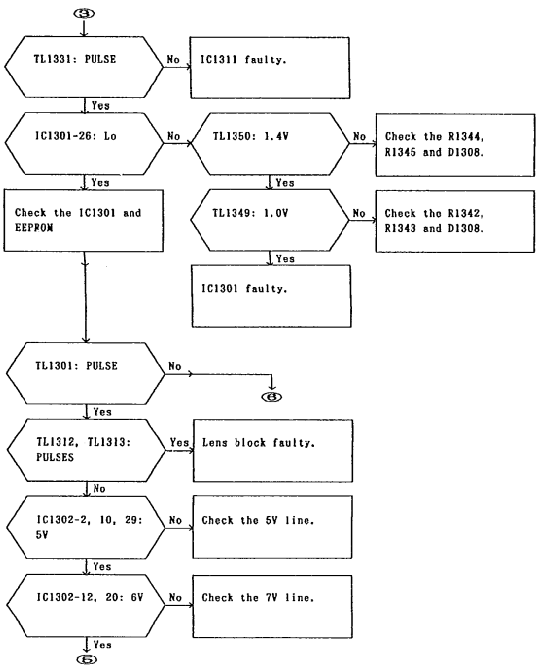

②
TL1350: 1.4V
No
Check the R1344, R1345, D1308.
Yes
TL1349: 1.0V
No
Check the R1342, R1343, D1308.
Yes
IC1301 faulty
③
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1303: PULSE
No
·R1307 faulty.
·IC1301 faulty.
Yes
Lens block faulty.

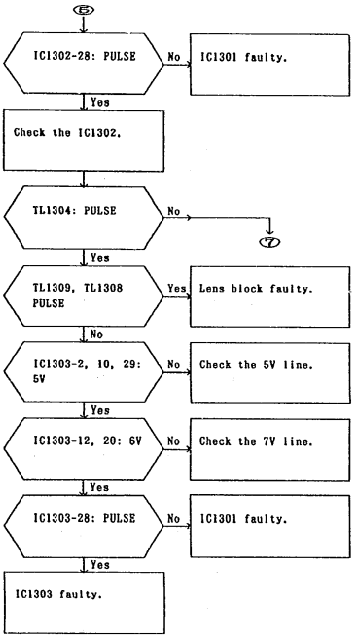
(3) NO ZOOM AND FOCUS OPERATION

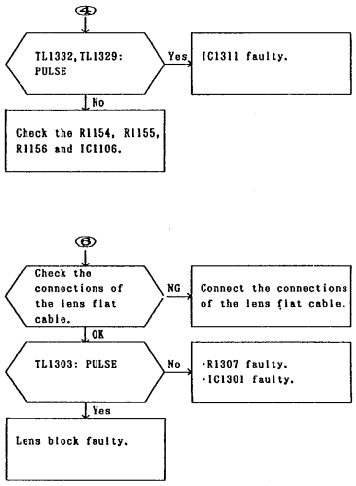


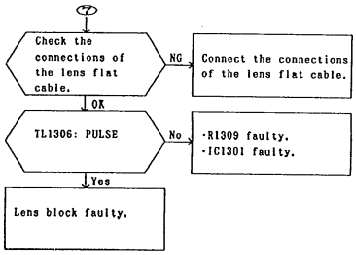


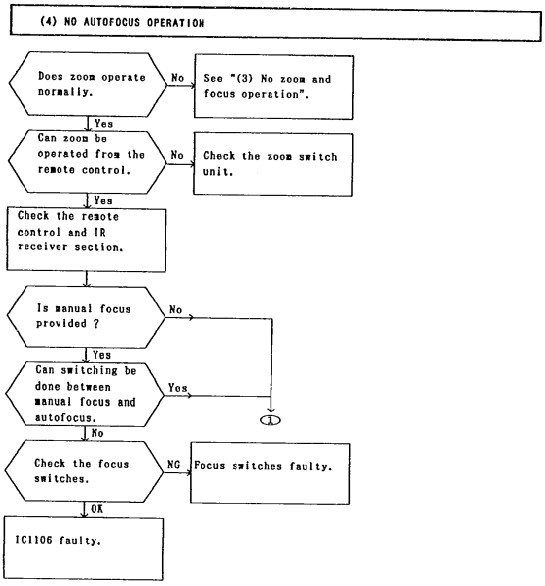


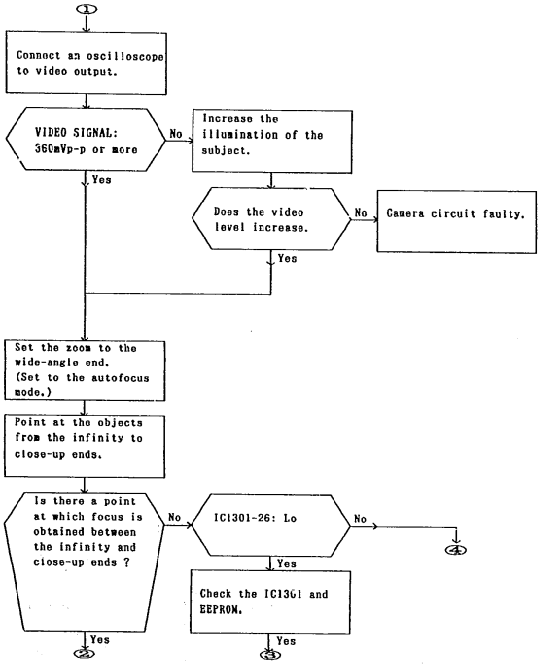


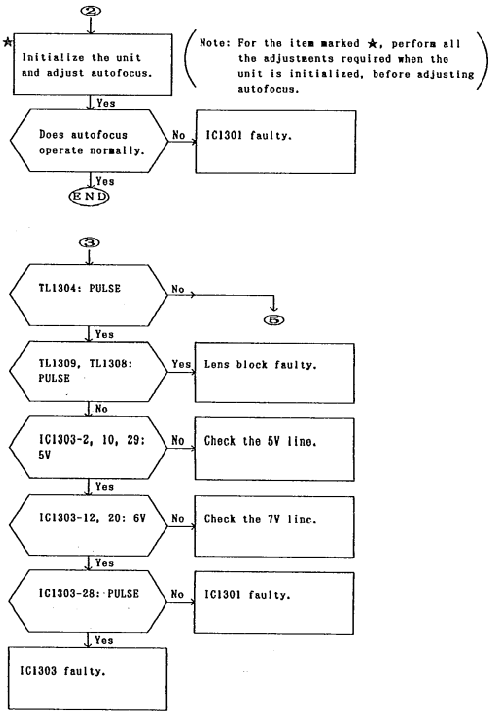

⑤
IC1302-28: PULSE
No
IC1301 faulty.
Yes
Check the IC1302.
TL1304: PULSE
No
⑦
Yes
TL1309, TL1308 PULSE
Yes
Lens block faulty.
No
IC1303-2, 10, 29: 5V
No
Check the 5V line.
Yes
IC1303-12, 20: 6V
No
Check the 7V line.
Yes
IC1303-28: PULSE
No
IC1301 faulty.
Yes
IC1303 faulty.

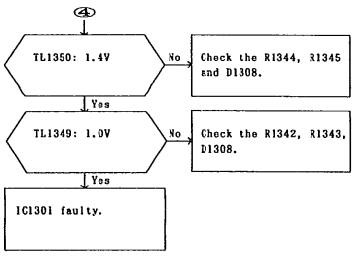

④
TL1332, TL1329: PULSE
Yes
IC1311 faulty.
No
Check the R1154, R1155, R1156 and IC1106.
⑥
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1303: PULSE
No
·R1307 faulty.
·IC1301 faulty.
Yes
Lens block faulty.

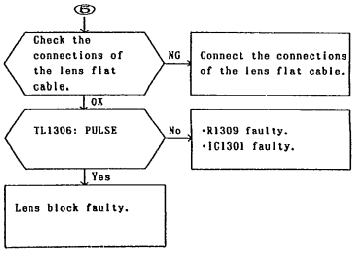

⑦
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1306: PULSE
No
·R1309 faulty.
·IC1301 faulty.
Yes
Lens block faulty.

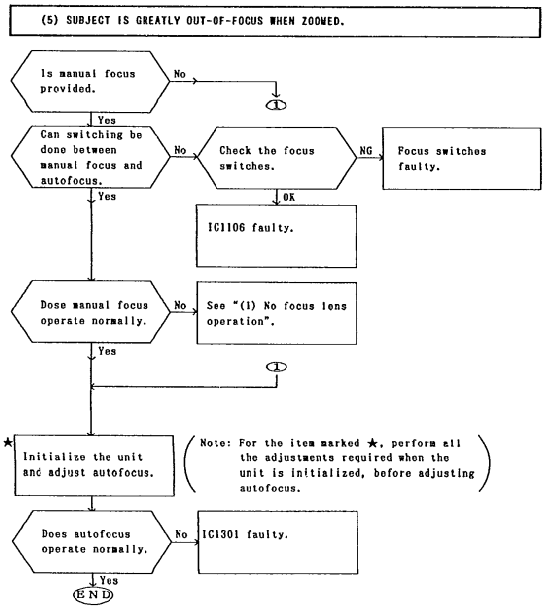

(4) NO AUTOFOCUS OPERATION
Does zoom operate normally.
No
See "(3) No zoom and focus operation".
Yes
Can zoom be operated from the remote control.
No
Check the zoom switch unit.
Yes
Check the remote control and IR receiver section.
Is manual focus provided ?
No
Yes
Can switching be done between manual focus and autofocus.
Yes
①
No
Check the focus switches.
NG
Focus switches faulty.
OK
IC1106 faulty.


①
Connect an oscilloscope to video output.
VIDEO SIGNAL: 360mVp-p or more
No
Increase the illumination of the subject.
Yes
Does the video level increase.
No
Camera circuit faulty.
Yes
Set the zoom to the wide-angle end. (Set to the autofocus mode.)
Point at the objects from the infinity to close-up ends.
Is there a point at which focus is obtained between the infinity and close-up ends ?
No
IC1301-26: Lo
No
④
Yes
Check the IC1301 and EEPROM.
Yes
③
Yes
②


②
★
Initialize the unit and adjust autofocus.
Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.
Yes
Does autofocus operate normally.
No
IC1301 faulty.
Yes
END
③
TL1304: PULSE
No
⑤
Yes
TL1309, TL1308: PULSE
Yes
Lens block faulty.
No
IC1303-2, 10, 29: 5V
No
Check the 5V line.
Yes
IC1303-12, 20: 6V
No
Check the 7V line.
Yes
IC1303-28: PULSE
No
IC1301 faulty.
Yes
IC1303 faulty.


④
TL1350: 1.4V
No
Check the R1344, R1345 and D1308.
Yes
TL1349: 1.0V
No
Check the R1342, R1343, D1308.
Yes
IC1301 faulty.

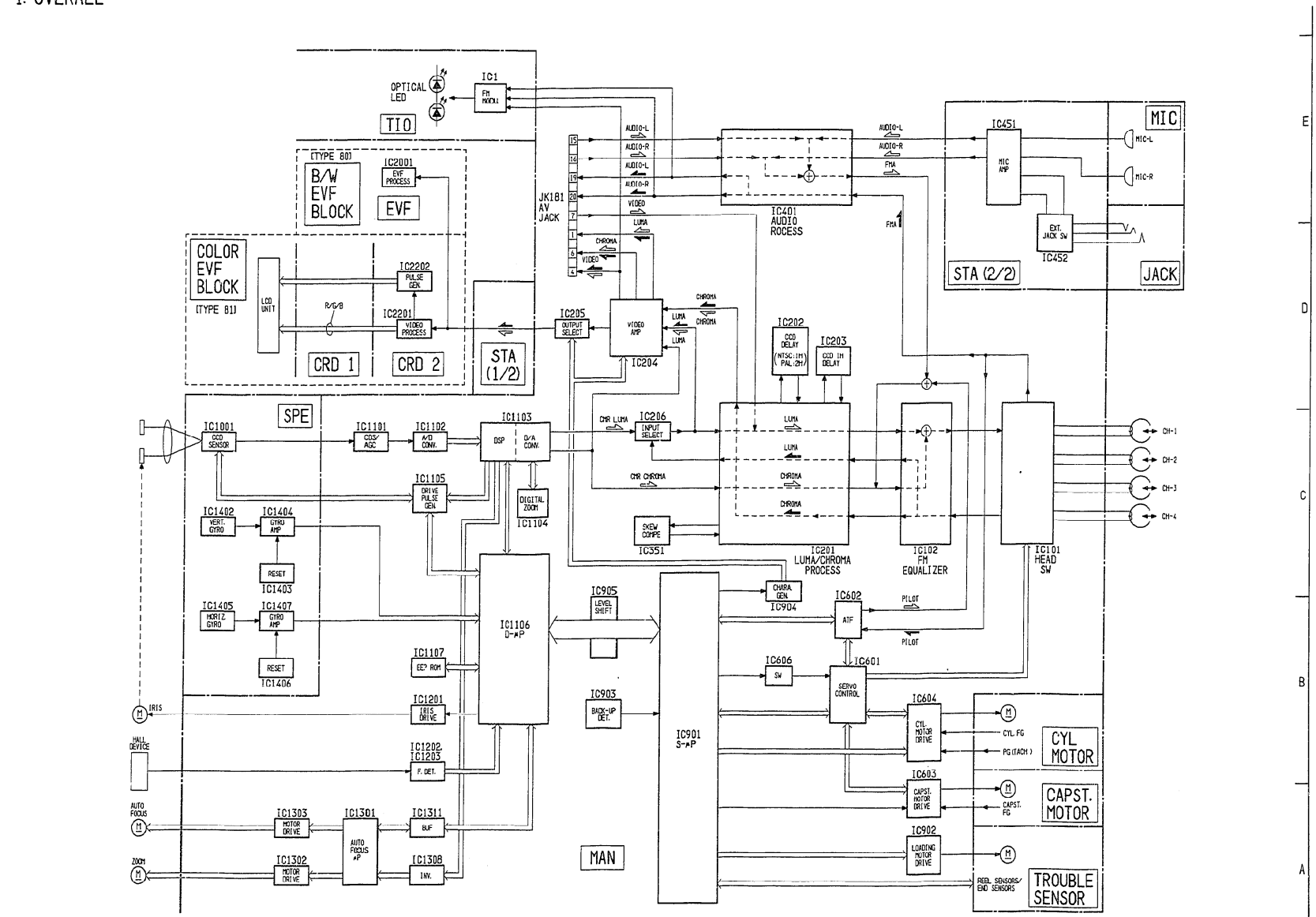

⑤
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1306: PULSE
No
·R1309 faulty.
·IC1301 faulty.
Yes
Lens block faulty.


(5) SUBJECT IS GREATLY OUT-OF-FOCUS WHEN ZOOMED.
Is manual focus provided.
No
①
Yes
Can switching be done between manual focus and autofocus.
No
Check the focus switches.
NG
Focus switches faulty.
Yes
OK
IC1106 faulty.
Dose manual focus operate normally.
No
See "(1) No focus lens operation".
Yes
①
★
Initialize the unit and adjust autofocus.
Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.
Does autofocus operate normally.
No
IC1301 faulty.
Yes
END

CHAPTER 4

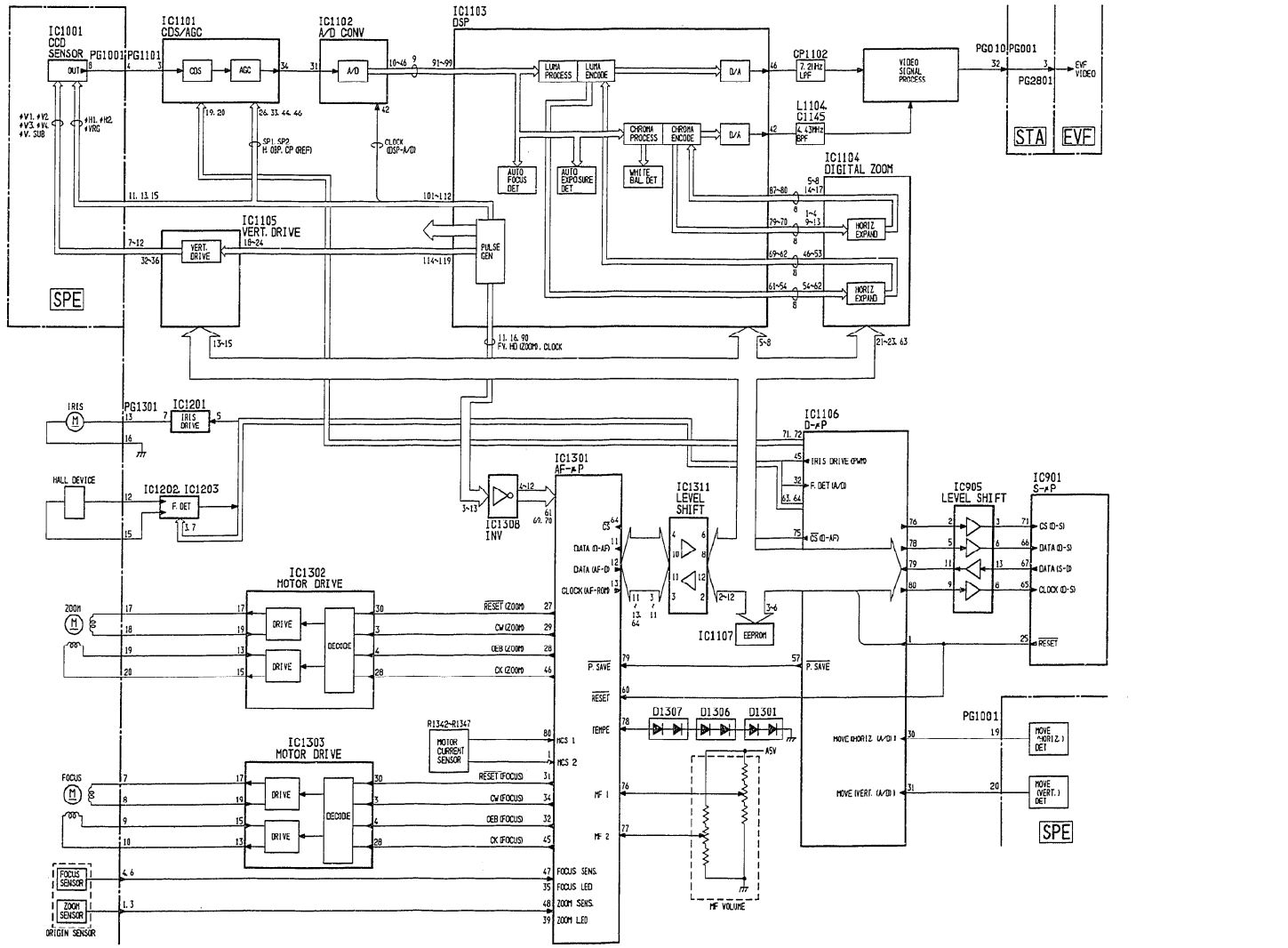
BLOCK DIAGRAMS & MICROPROCESSOR PIN FUNCTION TABLE

1. OVERALL

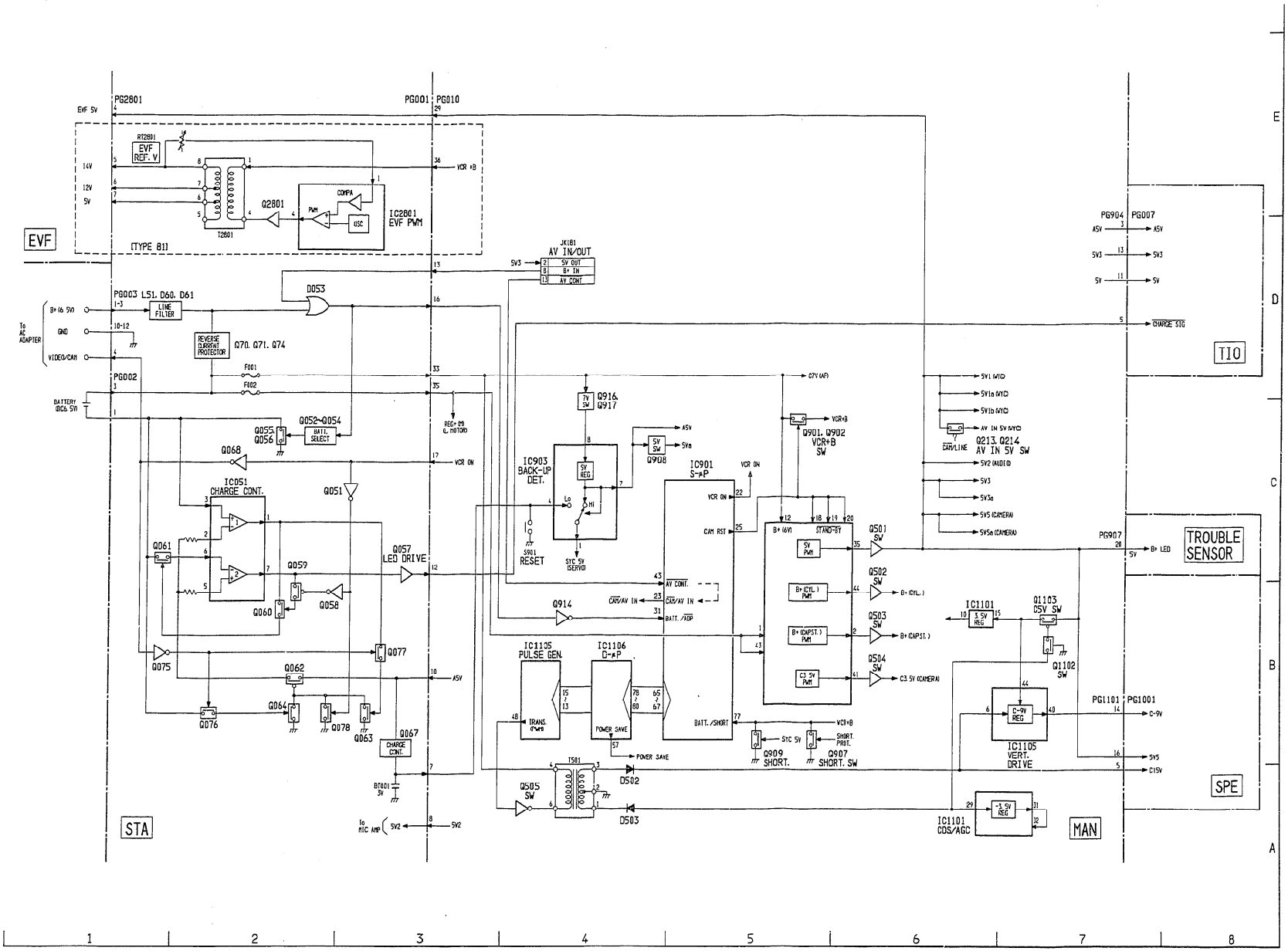


OVERALL 4-1 4-2 OVERALL

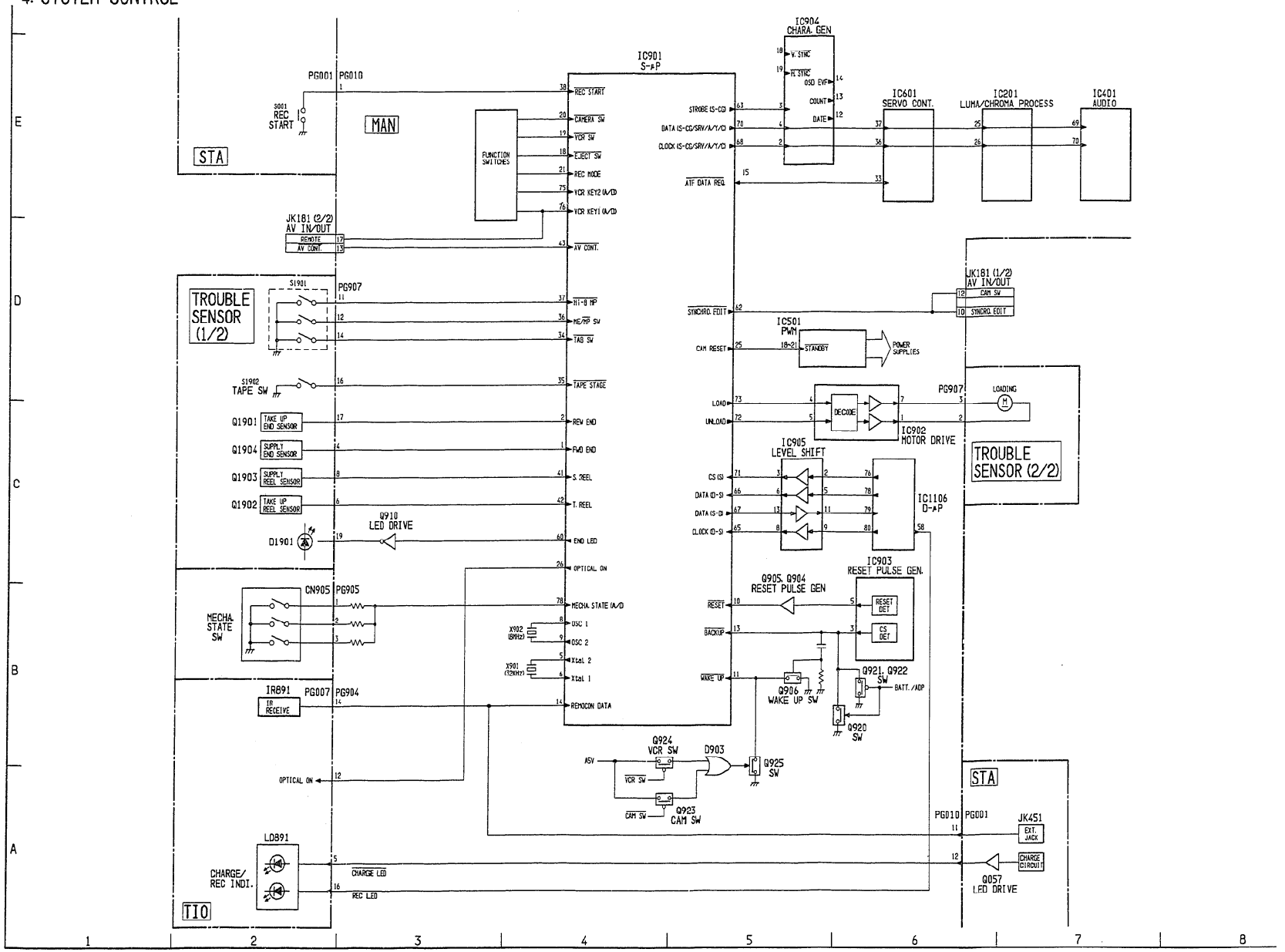
2. CAMERA


IC1001
CCD SENSOR
PG1001
PG1101
IC1101
CDS/AGC
IC1102
A/D CONV
IC1103
DSP
LUMA PROCESS
LUMA ENCODE
CHROMA PROCESS
CHROMA ENCODE
D/A
CP1102
7.2MHz LPF
L1104, C1145
4.43MHz BPF
VIDEO SIGNAL PROCESS
PG010
PG001
PG2801
SYS VIDEO
STA
EVF
AUTO FOCUS DET
AUTO EXPOSURE DET
WHITE BAL DET
IC1104
DIGITAL ZOOM
HORIZ EXPAND
IC1105
VERT. DRIVE
PULSE GEN
SPE
IRIS
PG1301
IC1201
IRIS DRIVE
HALL DEVICE
IC1202, IC1203
F. DET
IC1306
INV
IC1301
AF-AP
IC1311
LEVEL SHIFT
IC1106
D-AP
IC905
LEVEL SHIFT
IC901
S-AP
IC1107
EEPROM
IC1302
MOTOR DRIVE
ZOOM
DRIVE
DECODE
IC1303
MOTOR DRIVE
FOCUS
MOTOR CURRENT SENSOR
D1307
D1306
D1301
MF VOLUME
FOCUS SENSOR
ZOOM SENSOR
ORIGIN SENSOR
P. SAVE
RESET
PG1001
SPE

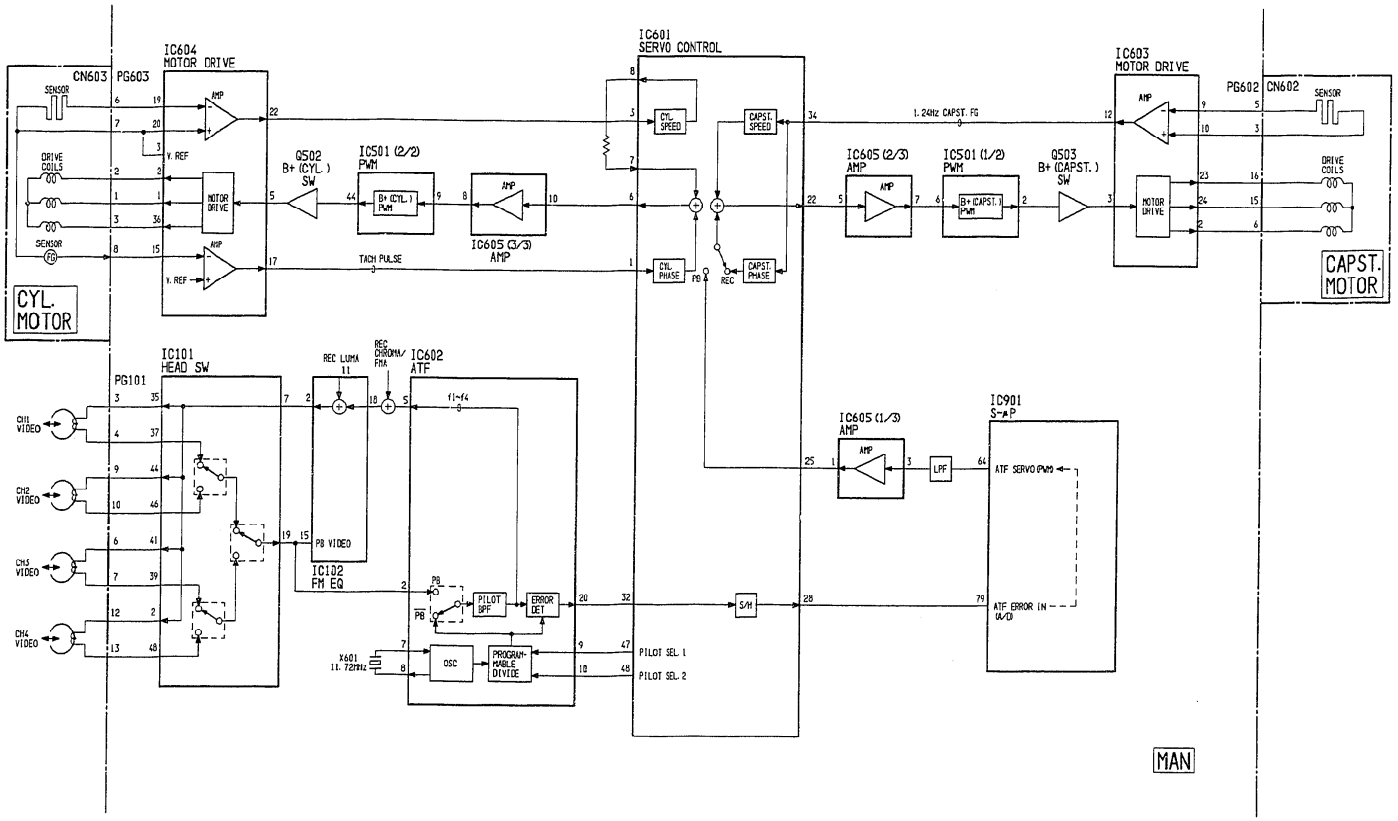
3. POWER


EVF
STA
TIO
SPE
MAN
TROUBLE SENSOR
PG2801
PG001 PG010
EVF 5V
RT2801
EVF REF. V
14V
12V
5V
T2801
Q2801
IC2801 EVF PWM
COMPA
PWM
OSC
(TYPE 811)
JK181 AV IN/OUT
5V OUT
B+ IN
AV CONT.
PG903 L51. D60. D61
B+ (6.5V)
GND
VIDEO/CAM
To AC ADAPTER
LINE FILTER
REVERSE CURRENT PROTECTOR
Q70. Q71. Q74
PG002
BATTERY (DC6.5V)
F001
F002
D053
Q916. Q917
7V SW
Q908
5V SW
5V REG
IC903 BACK-UP DET.
SYS. 5V (SERVO)
S901 RESET
IC901 S-uP
VCR ON
CAM RST
AV CONT.
CAM/AV IN
BATT. /ADP
POWER SAVE
BATT./SHORT
Q901. Q902 VCR+B SW
Q213. Q214 AV IN 5V SW
CAM/LINE
Q501 SW
Q502 SW
Q503 SW
Q504 SW
5V PWM
B+ (CYL.) PWM
B+ (CAPST.) PWM
C3.5V PWM
STAND-BY
IC1101 3.5V REG
Q1103 C5V SW
Q1102 SW
C-9V REG
IC1105 VERT. DRIVE
IC1101 COS/AGC
-3.9V REG
IC1105 PULSE GEN.
IC1106 C-uP
TRANS. PWR
Q909 SHORT.
Q907 SHORT. SW
SHORT. PROT.
SYS 5V
T501
Q505 SW
D502
D503
IC051 CHARGE CONT.
Q051
Q057 LED DRIVE
Q061
Q059
Q060
Q058
Q068
Q055 Q056
Q052-Q054
BATT. SELECT
REG+ 29 (L MOTOR)
Q075
Q076
Q077
Q062
Q064
Q078
Q063
Q067 CHARGE CONT.
BT001 3V
To MIC AMP
5V2
PG904 PG007
PG907
PG1101 PG1001
CHARGE STG
B+ LED
C-9V
C15V
5V1 (VTC)
5V1a (VTC)
5V1b (VTC)
AV IN 5V (VTC)
5V2 (AUDIO)
5V3
5V3a
5V5 (CAMERA)
5V5a (CAMERA)
C3.5V (CAMERA)
B+ (CYL.)
B+ (CAPST.)
VCR+B
ASV
5V3
5V
C7V (AF)

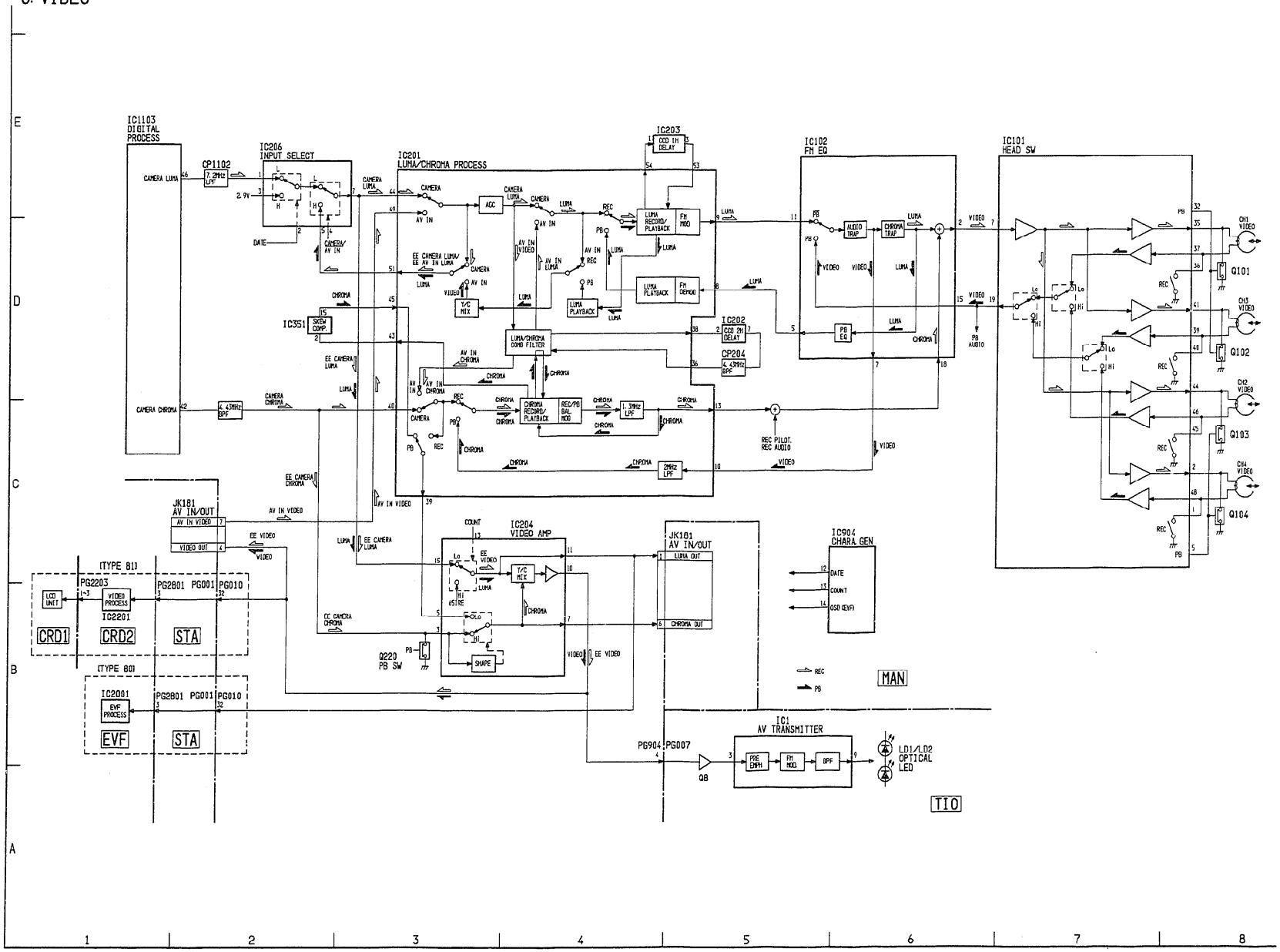
4. SYSTEM CONTROL



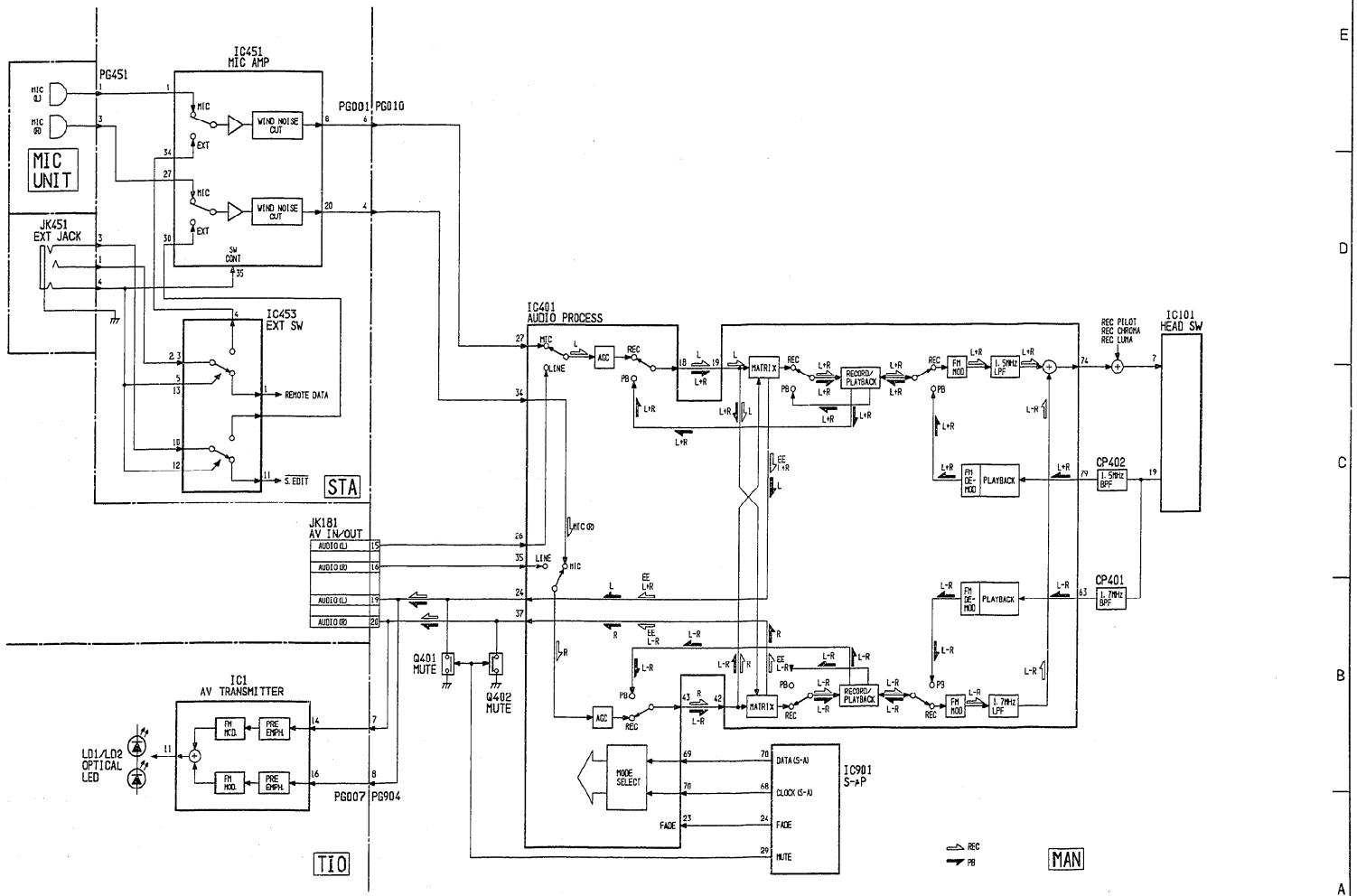
5. SERVO


IC604
MOTOR DRIVE
CN603
PG603
SENSOR
DRIVE COILS
SENSOR
CYL. MOTOR
V. REF
TACH PULSE
Q502
B+ (CYL.)
SW
IC501 (2/2)
PWM
B+ (CYL.)
IC605 (3/3)
AMP
IC601
SERVO CONTROL
CYL. SPEED
CAPST. SPEED
CYL. PHASE
CAPST. PHASE
PB
REC
1.24Hz CAPST. FG
IC605 (2/3)
AMP
IC501 (1/2)
PWM
B+ (CAPST.)
Q503
B+ (CAPST.)
SW
IC603
MOTOR DRIVE
PG602
CN602
SENSOR
DRIVE COILS
CAPST. MOTOR
IC101
HEAD SW
PG101
CH1 VIDEO
CH2 VIDEO
CH3 VIDEO
CH4 VIDEO
REC LUMA
REC CHROMA/FM
IC602
ATF
f1~f4
PB VIDEO
IC102
FM EQ
PB
PILOT BPF
ERROR DET
S/H
X601
11.72MHz
OSC
PROGRAMMABLE DIVIDE
PILOT SEL 1
PILOT SEL 2
IC605 (1/3)
AMP
LPF
IC901
S-A-P
ATF SERVO PWM
ATF ERROR IN
A/D
MAN

6. VIDEO


IC1103
DIGITAL
PROCESS
IC206
INPUT SELECT
CP1102
7.2MHz
LPF
IC201
LUMA/CHROMA PROCESS
IC203
CCD 1H
DELAY
IC102
FM EQ
IC101
HEAD SW
CAMERA LUMA
CAMERA CHROMA
DATE
2.9V
AV IN
ACC
LUMA
RECORD/
PLAYBACK
FM
MOD
FM
DEMOD
AUDIO
TRAP
CHROMA
TRAP
PB
EQ
VIDEO
PB AUDIO
IC351
SXSW
COMP.
IC202
CCD 2H
DELAY
CP204
4.43MHz
BPF
LUMA/CHROMA
COMB FILTER
CHROMA
RECORD/
PLAYBACK
REC/PB
BAL.
MOD
1.3MHz
LPF
2MHz
LPF
REC PILOT.
REC AUDIO
CH1
VIDEO
CH2
VIDEO
CH3
VIDEO
CH4
VIDEO
Q101
Q102
Q103
Q104
REC
PB
Lo
Hi
JK181
AV IN/OUT
AV IN VIDEO
VIDEO OUT
EE VIDEO
EE CAMERA
LUMA
EE CAMERA
CHROMA
IC204
VIDEO AMP
COUNT
Y/C
MIX
SHAPE
Q220
PB SW
JK181
AV IN/OUT
LUMA OUT
CHROMA OUT
IC904
CHARA GEN
DATE
COUNT
OSD (EVF)
(TYPE 811)
PG2203
LCD
UNIT
VIDEO
PROCESS
IC2201
PG2801 PG001 PG010
CRD1
CRD2
STA
(TYPE 801)
IC2001
EVF
PROCESS
EVF
STA
REC
PB
MAN
IC1
AV TRANSMITTER
PG904 PG007
Q8
PRE
EMPH
FM
MOD.
BPF
LD1/LD2
OPTICAL
LED
TIO

7. AUDIO


PG451
IC451
MIC AMP
MIC UNIT
MIC (L)
MIC (R)
WIND NOISE CUT
EXT
SW CONT
PGD01
PG010
JK451
EXT JACK
IC453
EXT SW
REMOTE DATA
S.EDIT
STA
IC401
AUDIO PROCESS
MIC
LINE
AGC
REC
PB
MATRIX
RECORD/ PLAYBACK
FM MOD
1.5MHz LPF
REC PILOT
REC CHROMA
REC LUMA
IC101
HEAD SW
FM DE-MOD
PLAYBACK
CP402
1.5MHz BPF
CP401
1.7MHz BPF
1.7MHz LPF
JK181
AV IN/OUT
AUDIO (L)
AUDIO (R)
Q401
MUTE
Q402
MUTE
IC1
AV TRANSMITTER
PRE EMPH.
LD1/LD2
OPTICAL
LED
PGD07
PG904
TIO
MODE SELECT
IC901
S-AP
DATA (S-A)
CLOCK (S-A)
FADE
MUTE
REC
PB
MAN

2. MICROPROCESSOR PIN FUNCTION TABLES

2-1. Digital Microprocessor (IC1106: D-μP)

Pin No.	I/O	Active Level	Abbreviation	Function
1	I	Lo	RESET(Lo)	Initializes IC1106.
2	O	(Pulse)	OSC OUT	Not used. Open
3	I	(Pulse)	CLOCK(14MHz) IN	Receives the 4fsc (14.32MHz) signal from IC1103 (DSP) as a reference clock signal.
4	I	—	MD1	Set the IC1106 operation mode. Connected to 3.5V power supply.
5	I	—	MD2	
6	-	—	NM1(Lo)	Not used. Connected to 3.5V power supply.
7	I	Lo	STANDBY(Lo)	Not used. Connected to 3.5V power supply.
8	-	—	V_{cc}	3.5V power input
9	-	—	—	Not used. Open
10	I	(Pulse)	RX DATA(R)	Perform initial settings and for data communicate with the personal computer used for adjustment.
11	O	(Pulse)	TX DATA(S)	
12	-	—	GND	Ground
13	I	Lo	TELE SW(Lo)	Zoom switch detection inputs
14	I	Lo	WIDE SW(Lo)	
15	I	Hi	T/W SLOW	Low-speed zoom detection input
16	I	—	FAR-SW	Not used. Open
17	I	-	NEAR-SW	Not used. Open
20	I	(Pulse)	AREA2	Receive pulses that detect the iris control area from IC1103 (DSP).
18	I	(Pulse)	FV	V. sync pulse input
19	I	(Pulse)	FP	Field detection pulse input
21	I	(Pulse)	HD	H. sync pulse input (to control the 9x16 mode (cinema) signal)
42	I	(Pulse)	HD	H. sync pulse input (to control communications)
22	O	(Pulse)	CINEMA	Supplies pulses to IC1103 (DSP) to control the wipe fade operation.
23	I	Lo	Hi-8(Lo)	Internal mode (handling Hi-8) setting input. This is grounded in Hi-8 models and connected to the 3.5V power supply in other models.
24	I	Lo	SECAM(Lo)	Internal mode (SECAM) setting input. Open
25	I	Lo	PAL(Lo)	Internal mode (PAL) setting input. Grounded.
26	-	—	—	Not used.
27	-	—	—	Not used.
28	-	—	—	Not used.
29	-	—	Vcc(A)	5V power supply input

Pin No.	I/O	Active Level	Abbreviation	Function
30	I	0V-5V	MOVE[HORIZ.(A/D)]	Horizontal/vertical camera shaking detection inputs. Supplied from IC405 [MOVE (HORIZ.)] and IC402 [MOVE (VERT.)].
31	I	0V-5V	MOVE[VERT.(A/D)]	
32	I	0V-5V	F.DET(A/D)	F value detection input. Receives the F.DET voltage detected by IC1202 (F.DET) and compares it with the reference voltage stored in IC1107 (EEPROM) to determine the F value.
33	O	0V-5V	PLL ADJ.	Checks the PLL used in the IC1103 (DSP).
34	I	0V-5V	CAMERA KEY 1(A/D)	Camera switch detection inputs.
35	I	0V-5V	CAMERA KEY 2(A/D)	
36	O	0V-5V	HALL ADJ.0(D/A)	Controls the bias voltage of the Hall device.
37	O	0V-5V	HALL ADJ.1(D/A)	Controls the offset voltage of the IC1202 (F.DET).
38	-	—	GND(A)	Ground
39	-	—	—	Not used. Open
40	-	—	—	
41	-	—	—	
43	-	—	—	
44	-	—	—	
45	O	(Pulse)	IRIS DRIVE(PWM)	Iris motor drive output. Smoothed by an integrating circuit and then supplied to the digital autofocus circuit.
46	O	0V-5V	XTAL ADJ.(A/D)	Adjusts the crystal of X1102 (17.7MHz). Not used. Open
47	-	—	Vcc	3.5V power supply input
48	-	—	—	Not used. Open
49	-	—	—	
50	-	—	—	
51	-	—	—	
52	-	—	—	
53	-	—	—	
54	-	—	—	
55	-	—	—	
56	-	—	GND	Ground
57	O	Lo	POWER SAVE(Lo)	Outputs "Lo" in modes other than camera recording to prevent non-essential circuits from operating, thus reducing power consumption.
58	O	(Pulse)	REC LED	Drives the recording indicator.
59	-	—	—	Not used. Open
60	-	—	—	
61	O	Hi	H.GYRO-RST	Output signals to reset IC405 [MOVE (HORIZ.)] and IC402 [MOVE (VERT.)].
62	O	Hi	V.GYRO-RST	

Pin No.	I/O	Active Level	Abbreviation	Function
63	O	Hi	HALL GAIN1	Control the gain of IC1202 (F.DET) (gain of Hall devices).
64	O	Hi	HALL GAIN2	
65	-	—	—	Not used. Open
66	-	—	—	
67	-	—	—	
68	-	—	—	
69	O	(Pulse)	LOAD(D-DZ)	Outputs pulses to latch the data transferred to IC1103 (DSP) and IC1104 (DIGITAL ZOOM).
70	O	(Pulse)	LOAD(D-VD)	Outputs pulses to latch the data transferred to IC1105 (VERT. DRIVE).
71	O	(Pulse)	CLOCK(D-CDS)	Output the data transferred to IC1101 (CDS/AGC).
72	O	(Pulse)	DATA(D-CDS)	
73	-	—	GND	Ground
74	O	(Pulse)	$\overline{CS}$(D-ROM)	Activates data communications with IC1107 (EEPROM).
75	O	(Pulse)	$\overline{CS}$(D-AF)	Activates data communications with IC1301 (AF-μP).
76	O	(Pulse)	$\overline{CS}$(D-S)	Activates data communications with IC901 (S-μP).
77	O	(Pulse)	$\overline{CS}$(D-CONT)	Controls data communications with IC905 (LEVEL SHIFT).
78	O	(Pulse)	DATA(D-S/DSP/VD/DZ/ ROM/AF)	Communicate data with IC901 (S-μP), IC1103 (DSP), IC1105 (VERT. DRIVE), IC1104 (DIGITAL ZOOM), IC1107 (EEPROM) and IC1301 (AF-μP).
79	I	(Pulse)	DATA(S/DSP/ROM/AF-D)	
80	I/O	(Pulse)	CLOCK(D/AF-S/DSP/ VD/DZ/ROM)	

2-2. System Control Microprocessor (IC901: S-μP)

Pin No.	I/O	Active Level	Abbreviation	Function
1	I	(Pulse)	FWD END	Supply tape end detection input
2	I	(Pulse)	REW END	Take-up tape end detection input
3	-	—	AV_{SS}	Ground of analog circuits
4	I	Hi	TEST	Test pin. Not used and grounded.
5	O	(Pulse)	Xtal 2	Generate 32kHz clock pulses.
6	I	(Pulse)	Xtal 1	
7	-	—	V_{SS}	Ground
8	I	(Pulse)	OSC 1	Generate 8MHz clock pulses.
9	O	(Pulse)	OSC 2	
10	I	Lo	RESET(Lo)	Initializes IC901.
11	I	Lo	WAKE-UP(Lo)	Starts IC901 when the camera or VCR mode, eject or record switch is input.
12	I	(Pulse)	SW25Hz	Input to switch the video heads and detect the cylinder lock.
13	I	Lo	BACK UP(Lo)	Battery presence/absence detection input. When the battery is removed, this pin inputs "Lo" and transfers the unit to the backup mode in which data is saved.
14	I	(Pulse)	REMOCON DATA	Receives data corresponding to the operation keys of the infrared remote control.
15	I	Lo	ATF DATA REQ.(Lo)	Receives a request to receive ATF data from the servo circuit (IC601).
16	I	(Pulse)	—	Not used.
17	I	(Pulse)	CAPST.FG	Receives the comparison signal for capstan speed control during recording and playback; also used as clock pulses for the linear tape counter.
18	I	Lo	EJECT SW(Lo)	Detects the eject switch operation and opens the cassette holder.
19	I	Lo	VCR SW(Lo)	Detects that the camera mode switch is in the VCR position and supplies the power required by the VCR section.
20	I	Lo	CAMERA SW(Lo)	Detects that the camera mode switch is in the CAMERA position and supplies the power required by the camera section.
21	I	Hi	REC MODE	Detects the record mode, START/STOP or HOLD TO REC.
22	O	Hi	VCR ON	Turns the switching regulator on and supplies the required power to the VCR section.
23	O	Lo/Hi	CAMERA(Lo)/AV IN	Output signal to control switching between the camera input and external input. Controls the video and audio circuits.
24	O	Hi	TRIG.FADE	Output to charge the fade circuit in the audio processing circuit.
25	O	Hi	RESET(CAM)	Initializes the microprocessor in the camera section with a "Hi" voltage.
26	O	Hi	OPTICAL ON	Outputs "Hi" when the VCR is turned on to activate the optical transmission circuit.
27	O	Hi	PB	Sets the video circuit to the playback mode.
28	O	Hi	RESET(CG)	Initializes IC904 (CHARA. GEN.) with a "Hi" voltage.
29	O	Hi	MUTE	Stops audio output when operation is switched.
30	O	Hi	NARRATION	Not used.
31	I	Hi/Lo	BATT./ADP.(Lo)	Detects whether power is supplied from the built-in battery or AC adapter.
32	I	Hi/Lo	NTSC/PAL(Lo)	Internal mode setting input.
33	I	(Pulse)	CYL.FG	Cylinder FG (CYL. FG) pulse input. Controls the cylinder speed during recording and playback.
34	I	Hi	TAB SW	Detects the erase prevention switch to inhibit recording.
35	I	Lo	TAPE STAGE(Lo)	When the cassette holder is closed, this starts the loading motor to switch the mechanism to the L STOP mode.
36	I	Hi/Lo	ME/MP(Lo)	Tape detection switch input. ME (metal evaporated) tape: Hi, MP (metal powder) tape: Lo
37	I	Lo	Hi8 MP(Lo)	Detects Hi-8 MP (metal powder) tape.
38	I	Lo	REC START(Lo)	Record switch detection input
39	I	Hi	TEST PROGRAM	Starts the test program when "Hi" is input.
40	I	Hi	PB HB	When the HB mode is detected by the video processor circuit (IC201) during playback, "Hi" is input.
41	I	(Pulse)	S.REEL	Supply/take-up reel sensor inputs. Used to calculate tape remaining and detect reel lock.
42	I	(Pulse)	T.REEL	
43	I	Lo	AV IN(Lo)	When the input adapter is connected to JK181, "Lo" is input.
44	I	Lo	CAPST.LOCK(Lo)	Receives the lock signal of the capstan speed control from IC601.
45	I	Hi	CLOG.	When the CLOG condition is detected by IC602 (ATF), "Hi" is input.
46	I	(Pulse)	SW12.5Hz	Used with the SW25Hz signal for channel detection to select the ATF reference pilot select signal.
47	O	Hi	CAPST.BRAKE	Brakes the capstan motor when search or playback is switched to still play.
48	O	Hi	CAPST.ACCEL	Accelerates the capstan motor when still play is released.
49	O	Hi	CAPST.REV	Drives the capstan motor in reverse.
50	O	Lo	CAPST.STBY(Lo)	Sets the capstan motor to the standby mode.
51	O	Hi	TRANSIENT	Increases the capstan speed control output to improve the transient response of the capstan motor.
52	O	Hi	CYL.V	Cylinder start voltage control output
54	O	Hi	CYL.DIS.	Cylinder forced sync operation control output
53	O	Hi	FE CONT.	Activates the flying erase head during recording and dubbing.
55	-	—	Vcc	5V power supply input
56	O	Lo	PRE CONT.(Lo)	Outputs "Lo" during playback to set the ATF circuit (IC602) to the playback mode.
57	O	Hi	SQUELCH	Stops video output when the operation is switched.
58	O	Hi	REC MUTE	Outputs "Hi" during phase matching to inhibit recording.
59	O	Hi	TRICK PLAY	Controls the operation mode of the video processor circuit.
60	O	(Pulse)	END LED	Outputs pulses to drive the end LED for the tape end sensor.

Pin No.	I/O	Active Level	Abbreviation	Function
61	O	Hi	CYL REVERSE	Output to control the direction of rotation of the cylinder motor. Outputs "Hi" when reversing the cylinder motor (when slight condensation is detected).
62	O	Lo	SYNCHRO.-EDIT(Lo)	Controls recording/recording pause of the VCR via JK181 during dubbing.
63	O	Hi	STROBE(S-CG)	Activates communications with the character generator (IC904).
64	O	(Pulse)	ATF OUT	ATF control voltage output
65	I	(Pulse)	CLOCK(D-S)	Communicate data with the digital microprocessor (IC1106).
66	I	(Pulse)	DATA(D-S)	
67	O	(Pulse)	DATA(S-D)	
71	I	Hi	CS(D-S)	
68	O	(Pulse)	CLOCK(S-CG/SRV/YC/ ATF/A)	Transfer data to the character generator (IC904: CHARA. GEN), servo circuit (IC601: SERVO), ATF control circuit (IC602: ATF), video circuit (IC201: Y/C) and audio processor (IC401: AUDIO PROCESS).
70	O	(Pulse)	DATA(S-CG/SRV/YC/ ATF/A)	
69	O	Lo	$\overline{CS}$(S-ATF)	Enables communications with IC602.
72	O	Hi	UNLOAD	Control the direction of rotation of the loading motor.
73	O	Hi	LOAD	
74	-	-	B+(A/D)	Power input to A/D converter. Connected to 5V power supply.
75	I	0V-5V	VCR KEY1(A/D)	Receives a voltage corresponding to the key operated and compares it with the reference voltage to detect the key that has been operated.
76	I	0V-5V	VCR KEY2(A/D)	
77	I	0V-5V	BATT./SHORT(A/D)	Detects the battery terminal voltage and short-circuits in the power circuit.
78	I	Hi/Lo	MECHA.STATE	Detects the mechanism mode.
79	I	0V-5V	ATF ERROR(AD/D)	ATF error signal detection input. Receives an ATF error voltage during playback and samples it to control the phase of the capstan motor.
80	I	0V-5V	DEW(AD/D)	Not used.

CHAPTER 5

SCHEMATIC & CIRCUIT BOARD DIAGRAMS

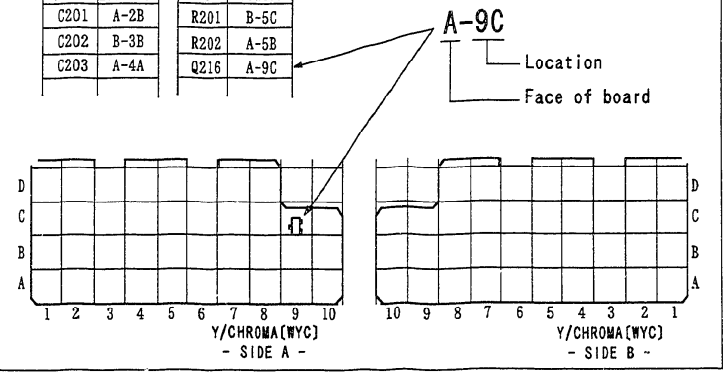
[Parts Location Indexing Tables]

This service manual shows the parts location indexing tables beside the major circuit board diagrams. These tables indicate the locations of each part on the circuit boards. Use the tables to locate the parts on the circuit boards.

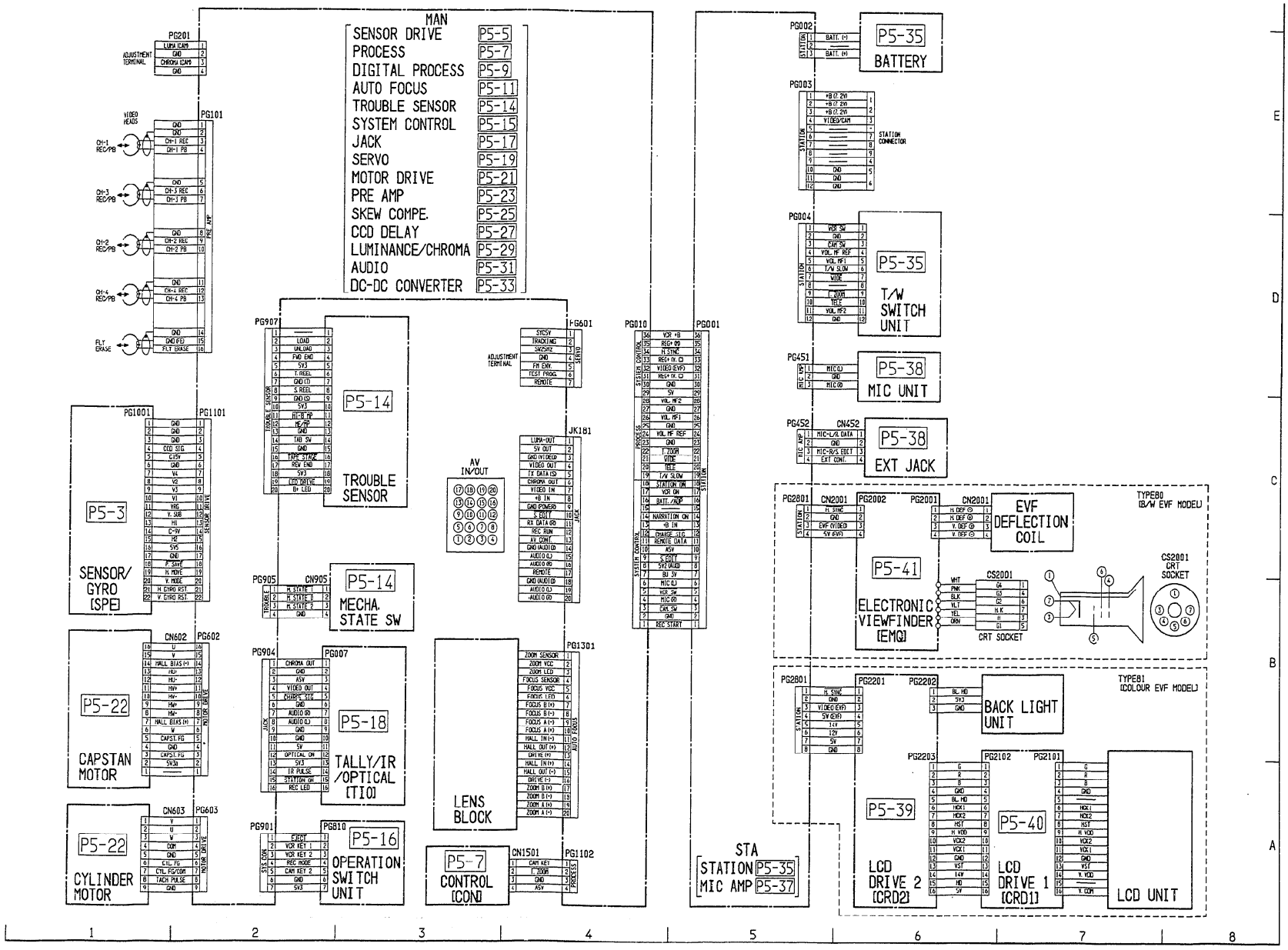
IDENTIFICATION OF PARTS LOCATION

Symbol No.	Parts Location
C201	A-2B
C202	B-3B
C203	A-4A

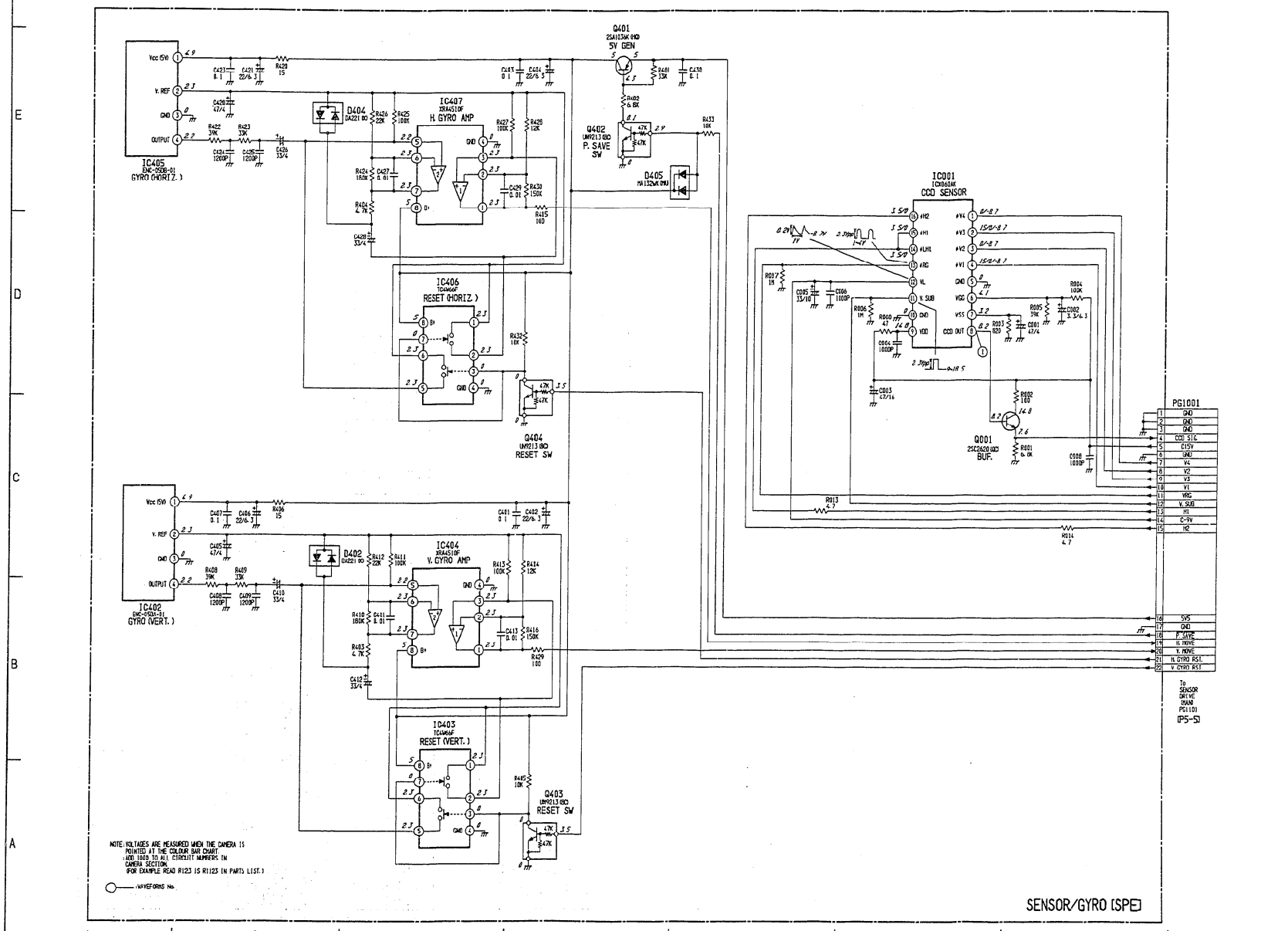
Symbol No.	Parts Location
R201	B-5C
R202	A-5B
Q216	A-9C



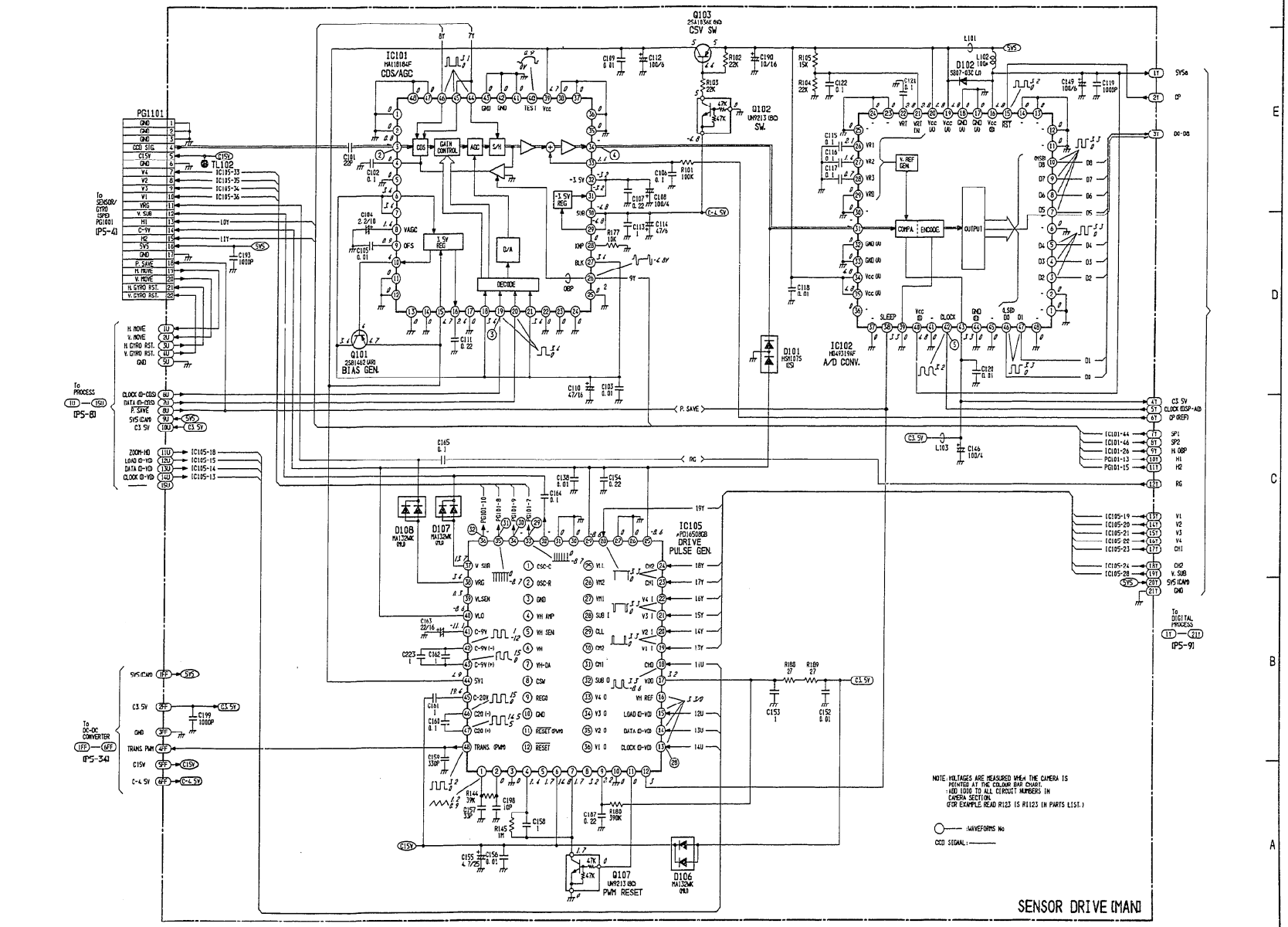
INTERNAL WIRING DIAGRAM



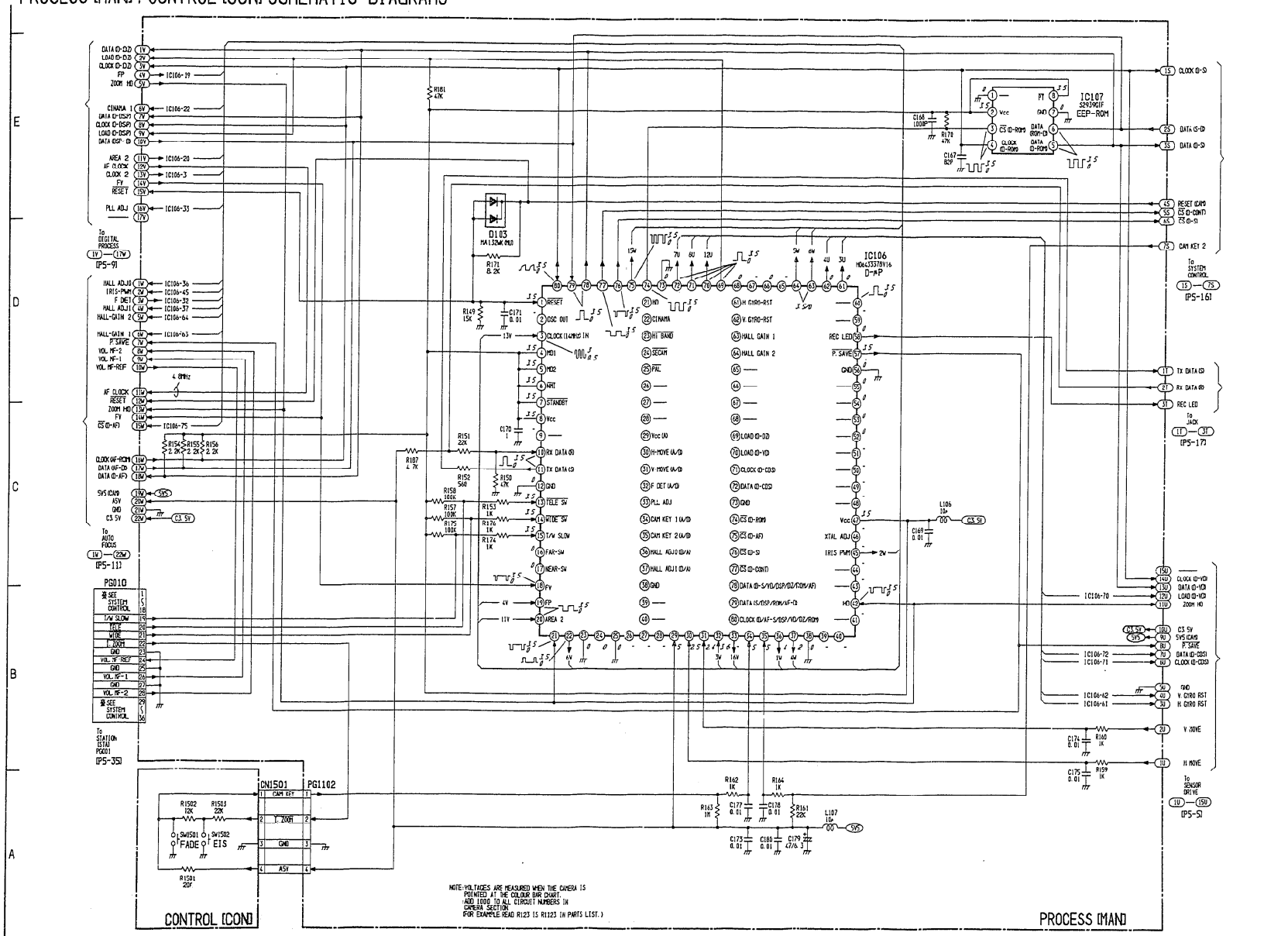
SENSOR/GYRO [SPE] SCHEMATIC DIAGRAM



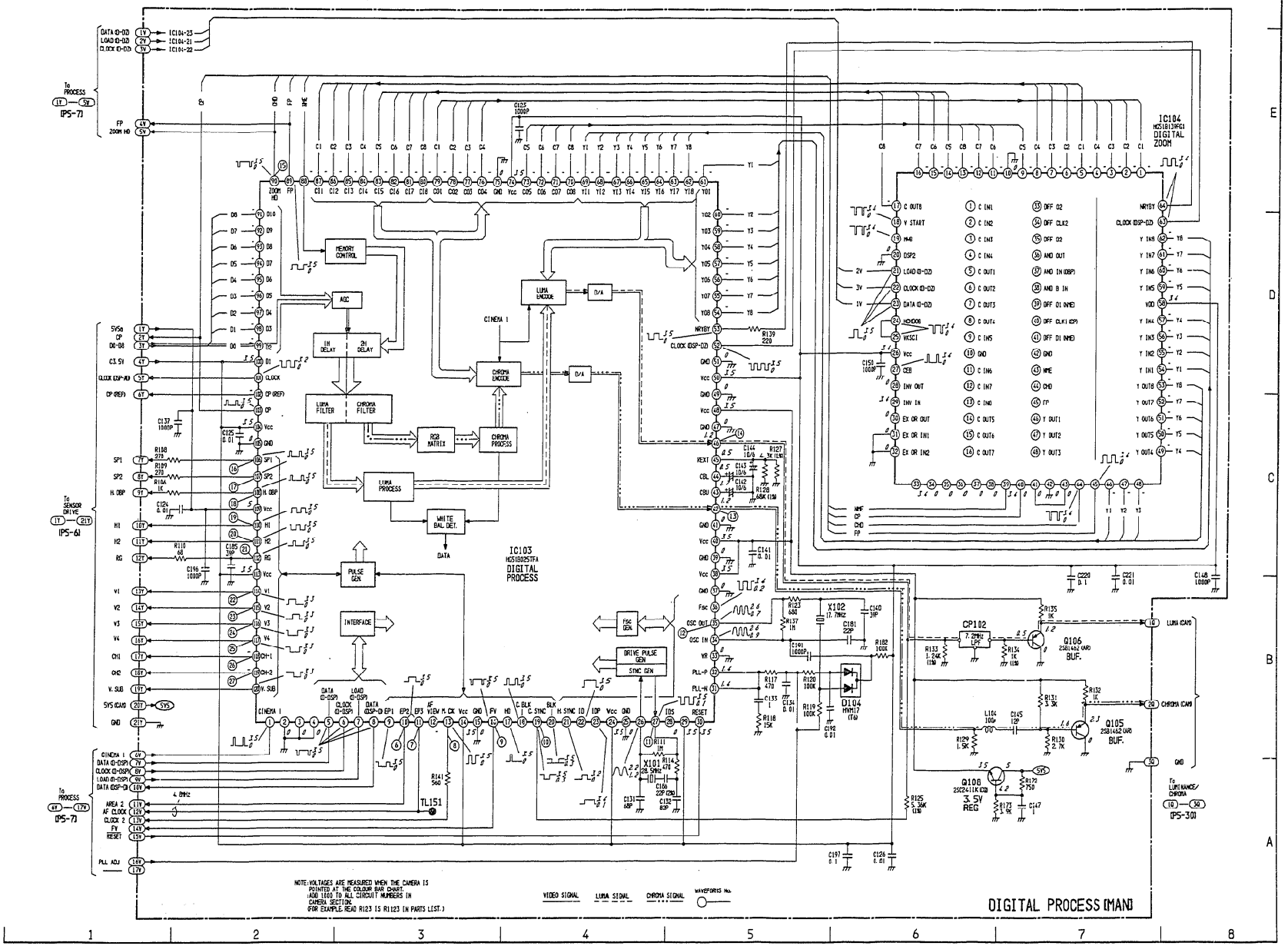
SENSOR DRIVE [MAN] SCHEMATIC DIAGRAM



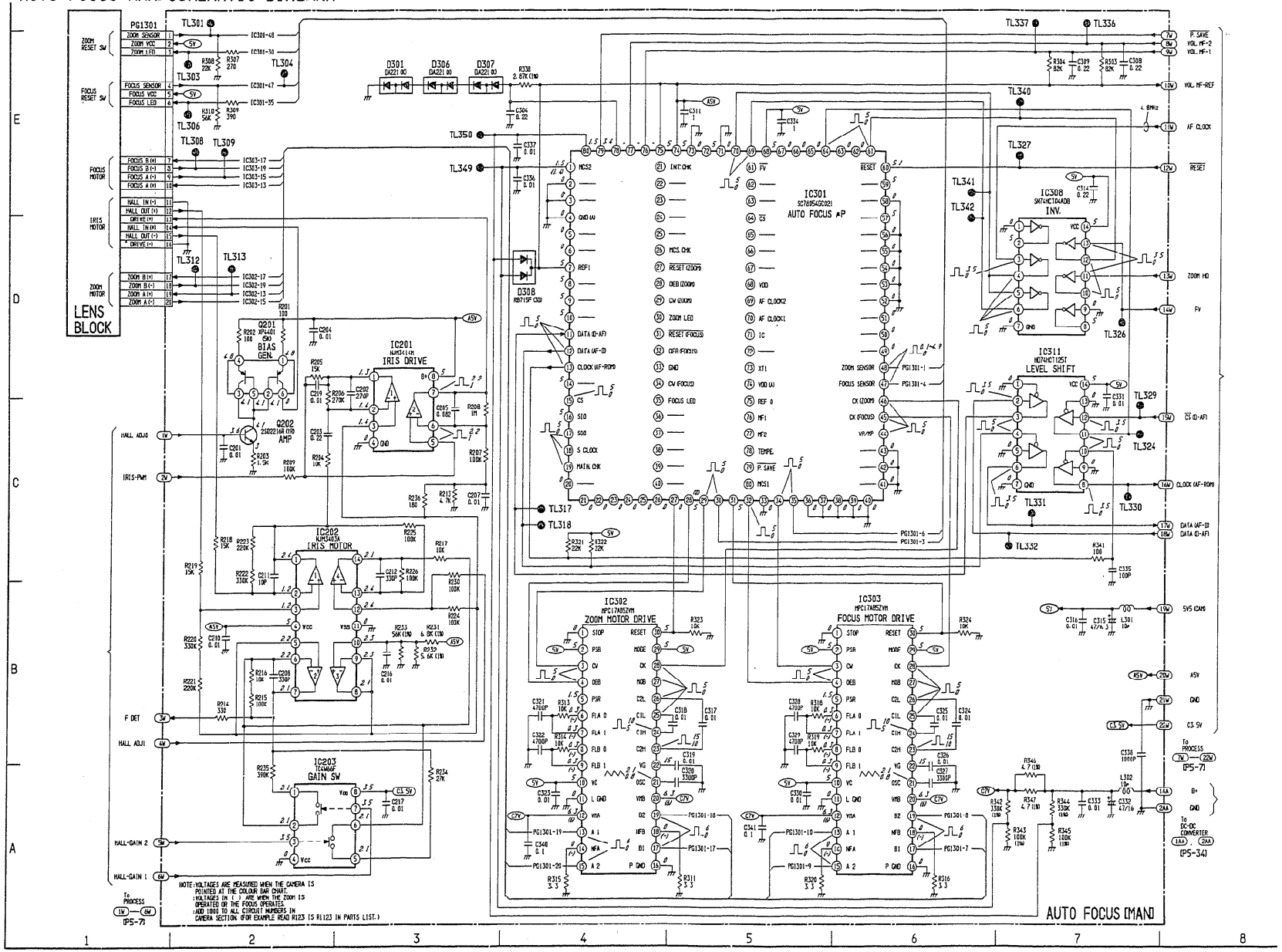
PROCESS [MAN] . CONTROL [CON] SCHEMATIC DIAGRAMS



DIGITAL PROCESS (MAIN) SCHEMATIC DIAGRAM



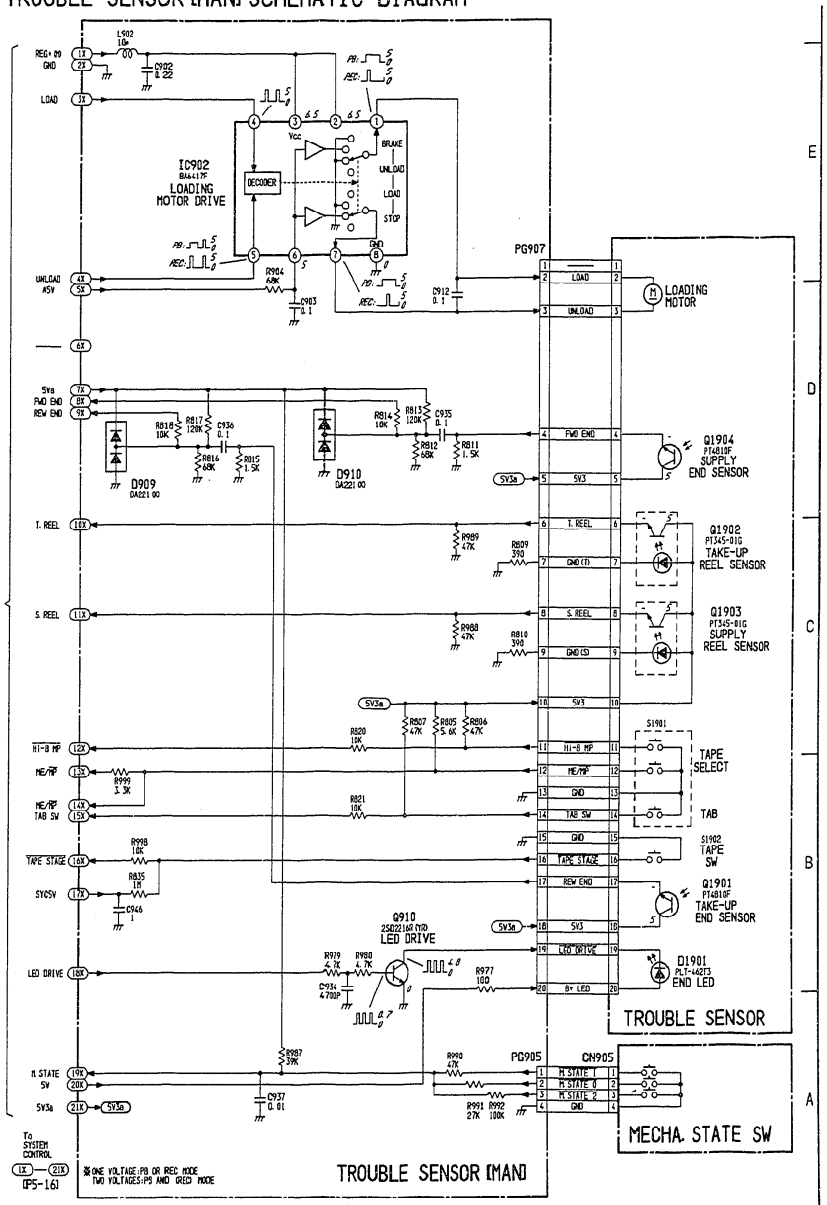
AUTO FOCUS [MAN] SCHEMATIC DIAGRAM



CAMERA SECTION WAVEFORMS

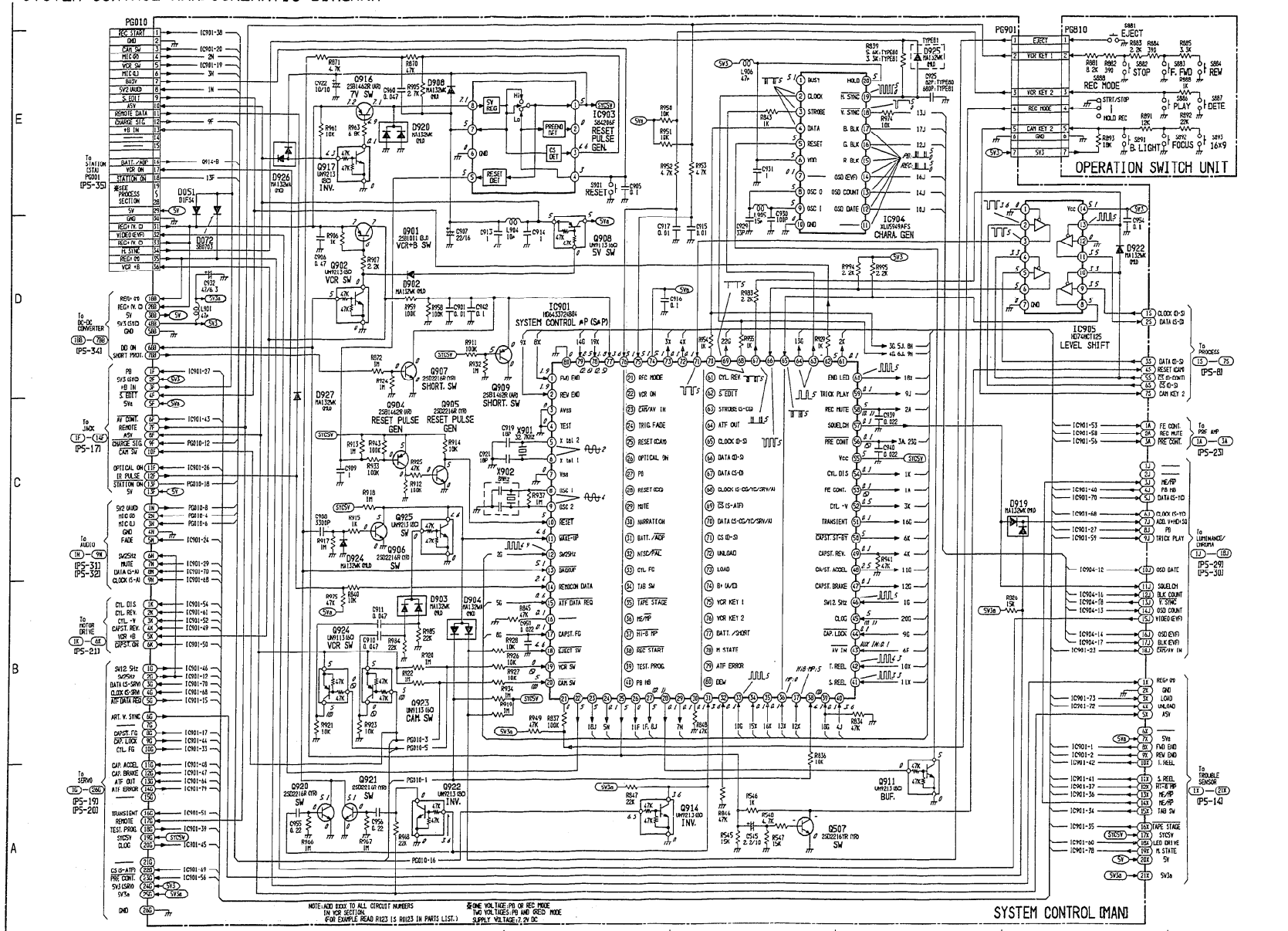
1-A IC1001-8 800mVp-p 0.2V/20.0μ sec.cm COLOR CHART	9-A IC1103-14 3.5Vp-p 1V/5.0msec.cm COLOR CHART	17-A IC1103-107 3.0Vp-p 1V/50.0msec.cm COLOR CHART	25-A IC1103-117 3.5Vp-p 1V/20.0μ sec.cm COLOR CHART
2-A IC1101-3 700mVp-p 0.2V/20.0μ sec.cm COLOR CHART	10-A IC1103-19 3.5Vp-p 1V/20.0μ sec.cm COLOR CHART	18-A IC1103-108 3.5Vp-p 1V/20.0μ sec.cm COLOR CHART	26-A IC1103-118 3.5Vp-p 1V/5.0msec.cm COLOR CHART
3-A IC1101-17 3.5Vp-p 1V/10.0msec.cm COLOR CHART	11-A IC1103-27 2.0Vp-p 0.5V/50.0msec.cm COLOR CHART	19-A IC1103-110 5.2Vp-p 1V/5.0msec.cm COLOR CHART	27-A IC1103-119 3.5Vp-p 1V/5.0msec.cm COLOR CHART
4-A IC1101-34 1.5Vp-p 0.5V/20.0μ sec.cm COLOR CHART	12-A IC1103-36 2.0Vp-p 0.5V/50.0msec.cm COLOR CHART	20-A IC1103-111 5.2Vp-p 1V/5.0msec.cm COLOR CHART	28-A IC1105-13 3.5Vp-p 1V/20.0μ sec.cm COLOR CHART
5-A IC1102-42 3.5Vp-p 1V/50.0msec.cm COLOR CHART	13-A IC1103-42 800mVp-p 0.2V/20.0μ sec.cm COLOR CHART	21-A IC1103-112 5.5Vp-p 1V/5.0msec.cm COLOR CHART	29-A IC1105-33 9.2Vp-p 2V/20.0μ sec.cm COLOR CHART
6-A IC1103-12 3.5Vp-p 1V/2.0msec.cm COLOR CHART	14-A IC1103-44 1.0Vp-p 0.2V/20.0μ sec.cm COLOR CHART	22-A IC1103-114 3.5Vp-p 1V/20.0μ sec.cm COLOR CHART	30-A IC1105-34 9.2Vp-p 2V/20.0μ sec.cm COLOR CHART
7-A IC1103-11 3.5Vp-p 1V/5.0msec.cm COLOR CHART	15-A IC1103-98 3.5Vp-p 1V/20.0μ sec.cm COLOR CHART	23-A IC1103-115 3.5Vp-p 1V/20.0μ sec.cm COLOR CHART	31-A IC1105-35 9.0Vp-p 2V/20.0μ sec.cm COLOR CHART
8-A IC1103-13 4.0Vp-p 1V/50.0msec.cm COLOR CHART	16-A IC1103-106 3.8Vp-p 1V/50.0msec.cm COLOR CHART	24-A IC1103-116 3.5Vp-p 1V/20.0μ sec.cm COLOR CHART	32-A IC1105-36 9.0Vp-p 2V/20.0μ sec.cm COLOR CHART

TROUBLE SENSOR [MAN] SCHEMATIC DIAGRAM

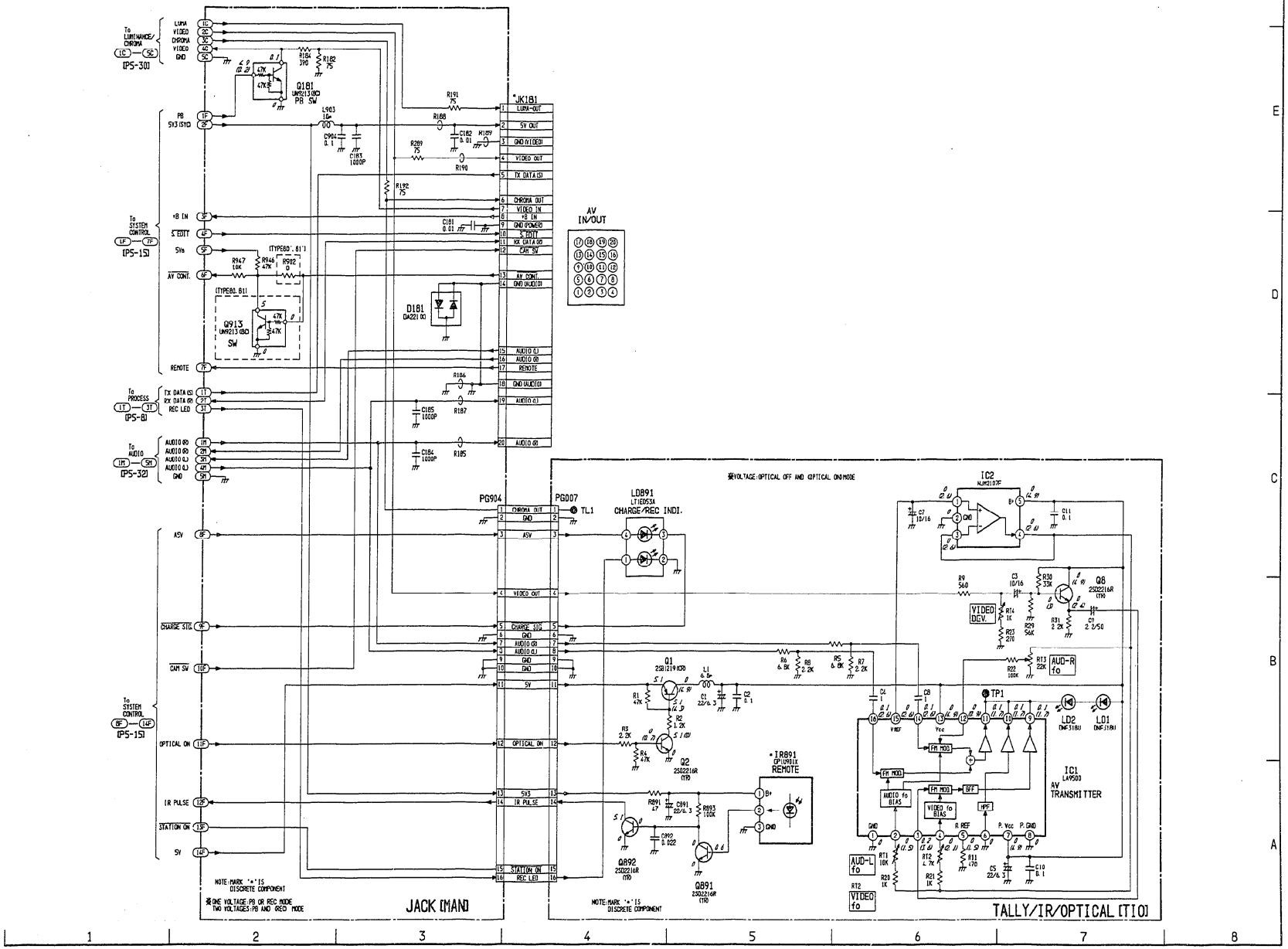


CAMERA SECTION WAVEFORMS 5-13 5-14 TROUBLE SENSOR

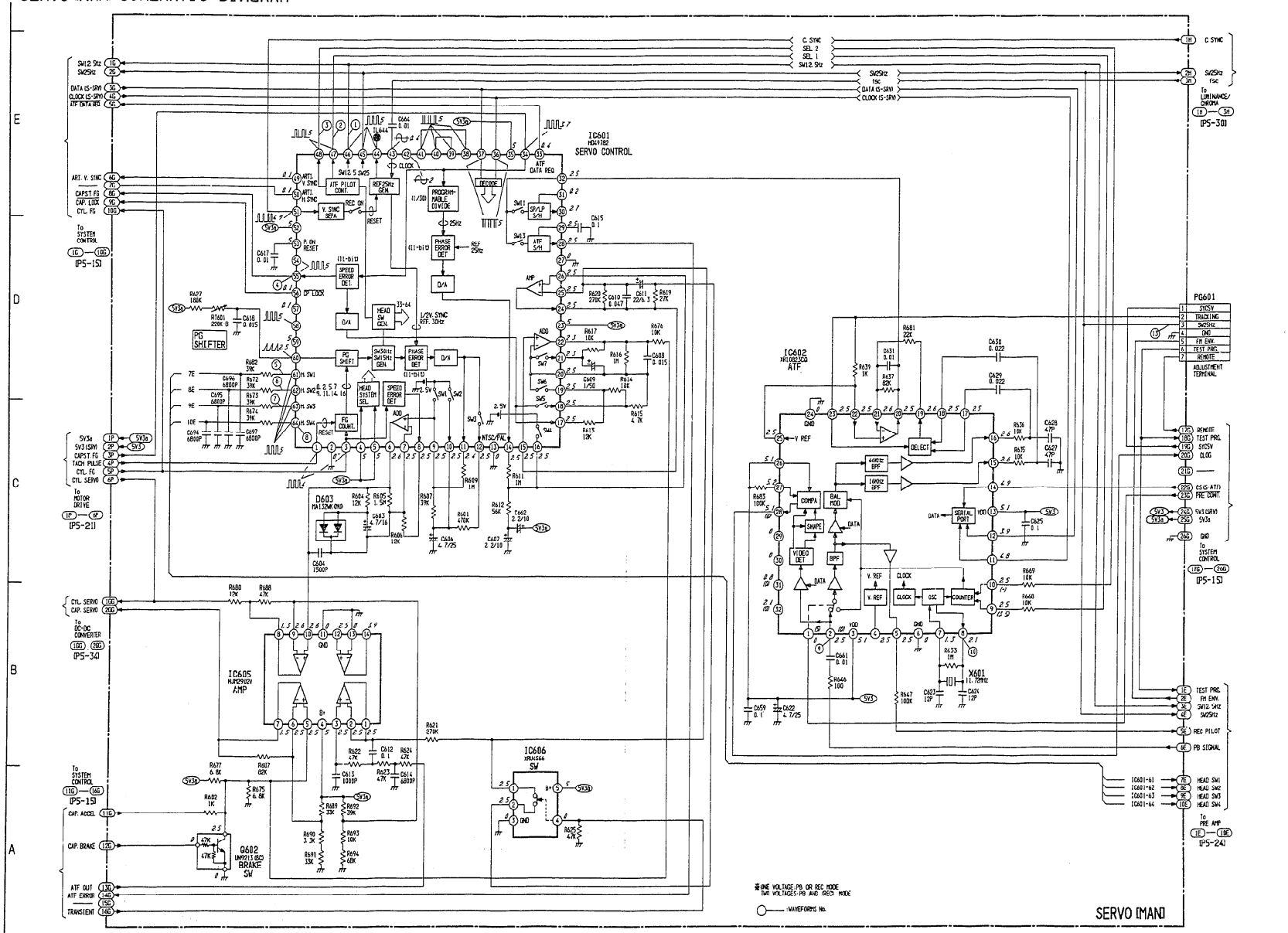
SYSTEM CONTROL [MAN] SCHEMATIC DIAGRAM



JACK [MAN] . TALLY/IR/OPTICAL [TIO] SCHEMATIC DIAGRAMS



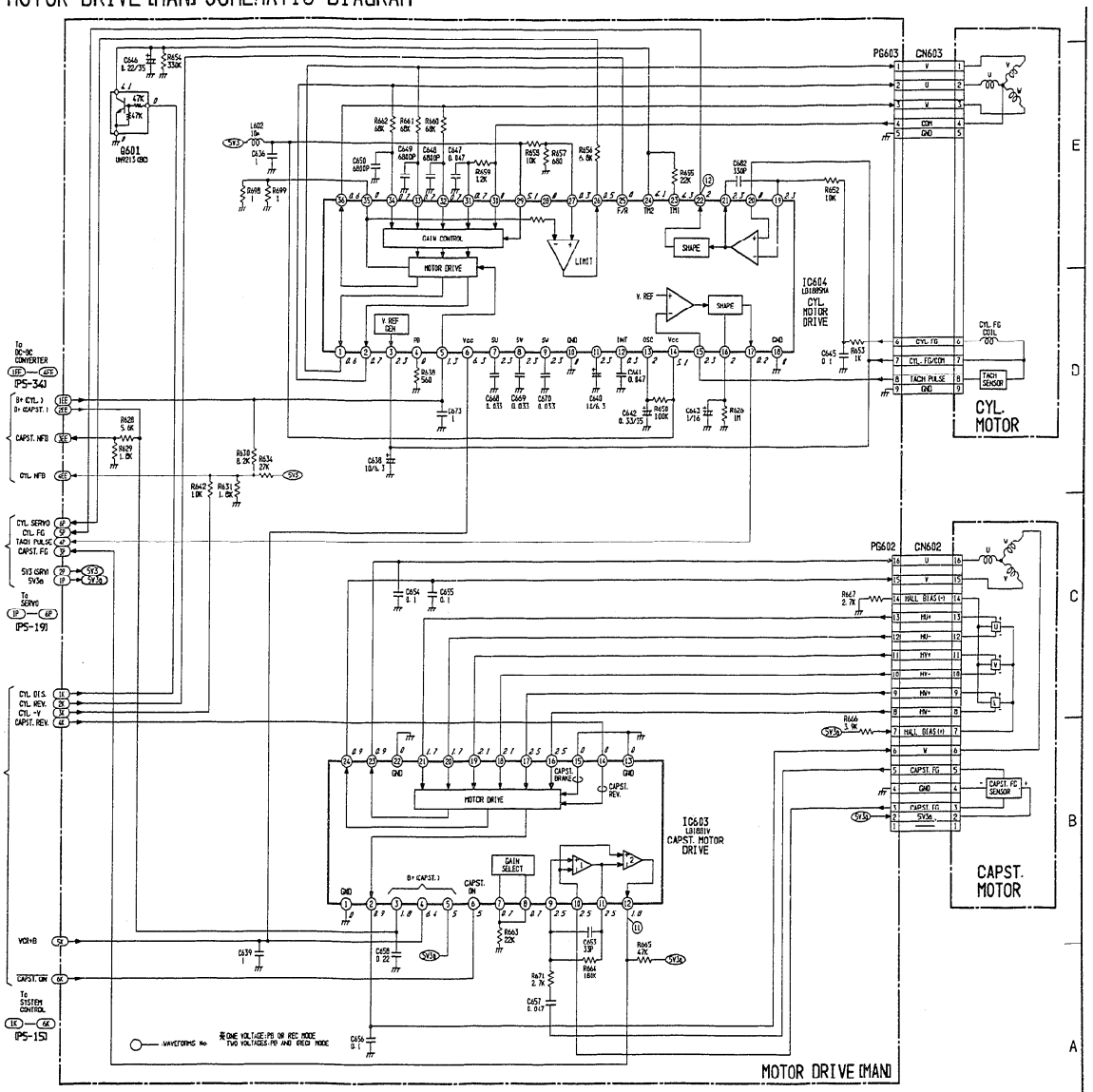
SERVO [MAN] SCHEMATIC DIAGRAM



SERVO WAVEFORMS

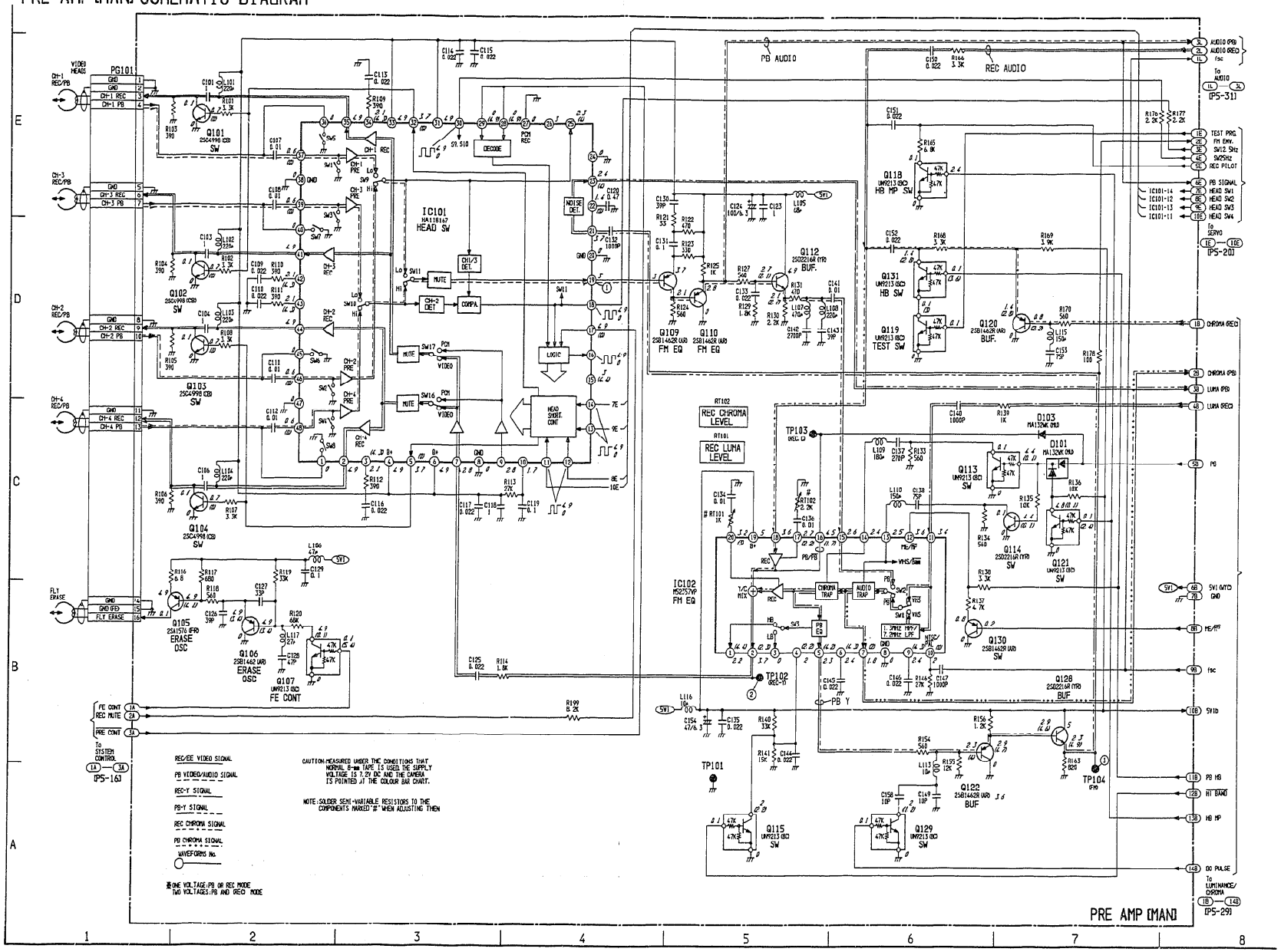
1-A IC601-46 5.5Vp-p 2V/20.0msec.cm REC/PLAY	6-B IC602-62 5.2Vp-p 2V/20.0msec.cm PLAY	12-A IC604-22 4.3Vp-p 1V/1.0msec.cm REC/PLAY
2-A IC601-47 5.2Vp-p 2V/10.0msec.cm REC/PLAY	7-A IC601-63 5.2Vp-p 2V/20.0msec.cm REC	13-A PG601-3 5.1Vp-p 1V/5.0msec.cm REC/PLAY
3-A IC601-48 5.5Vp-p 2V/10.0msec.cm REC	7-B IC601-63 5.2Vp-p 2V/20.0msec.cm PLAY	
3-B IC601-48 5.5Vp-p 2V/10.0msec.cm PLAY	8-A IC601-64 5.2Vp-p 2V/20.0msec.cm REC	
4-A IC601-53 5.0Vp-p 2V/200μsec.cm REC/PLAY	8-B IC601-64 5.2Vp-p 2V/20.0msec.cm PLAY	
5-A IC601-61 5.2Vp-p 2V/20.0msec.cm REC	9-B IC602-2 500mVp-p 0.2V/5.0msec.cm PLAY	
5-B IC601-61 5.2Vp-p 2V/20.0msec.cm PLAY	10-A IC602-8 1Vp-p 0.2V/50.0msec.cm REC/PLAY	
6-A IC601-62 5.2Vp-p 2V/20.0msec.cm REC	11-A IC603-12 3.7Vp-p 1V/200μsec.cm REC/PLAY	

MOTOR DRIVE [MAN] SCHEMATIC DIAGRAM

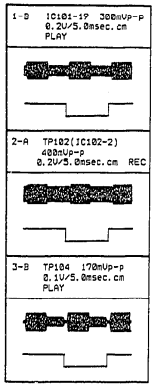


SERVO WAVEFORMS. MOTOR DRIVE 5-21 5-22 MOTOR DRIVE

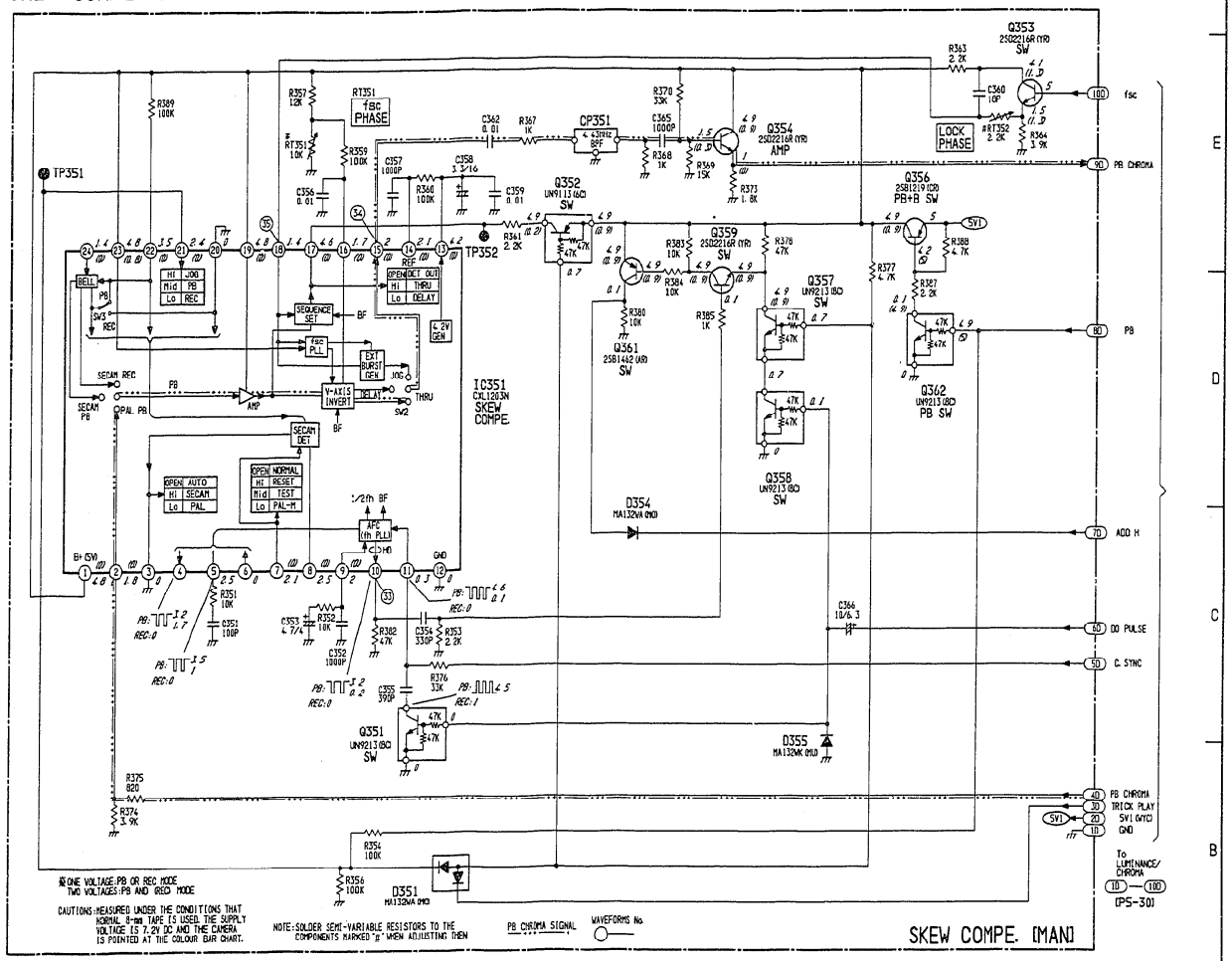
PRE AMP [MAN] SCHEMATIC DIAGRAM



PRE AMP WAVEFORMS

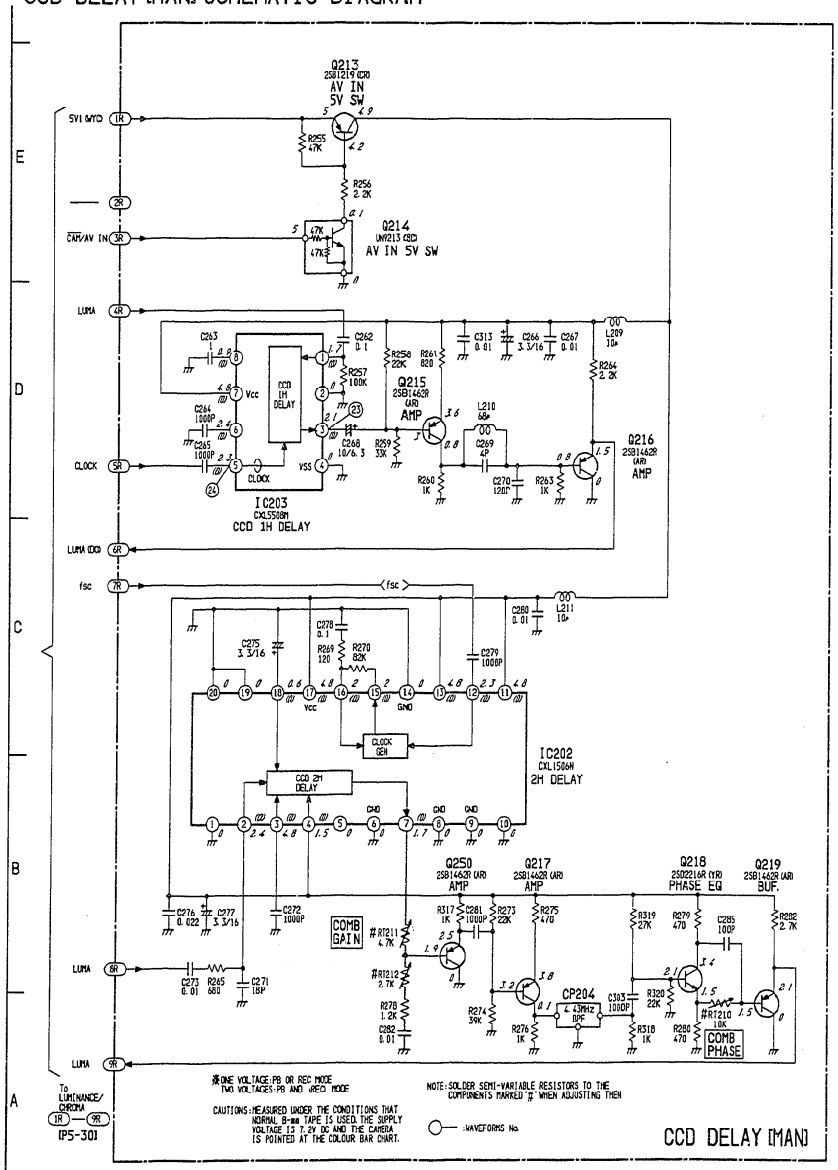


SKEW COMPE. [MAN] SCHEMATIC DIAGRAM



PRE AMP WAVEFORMS. SKEW COMPE. 5-25 5-26 SKEW COMPE.

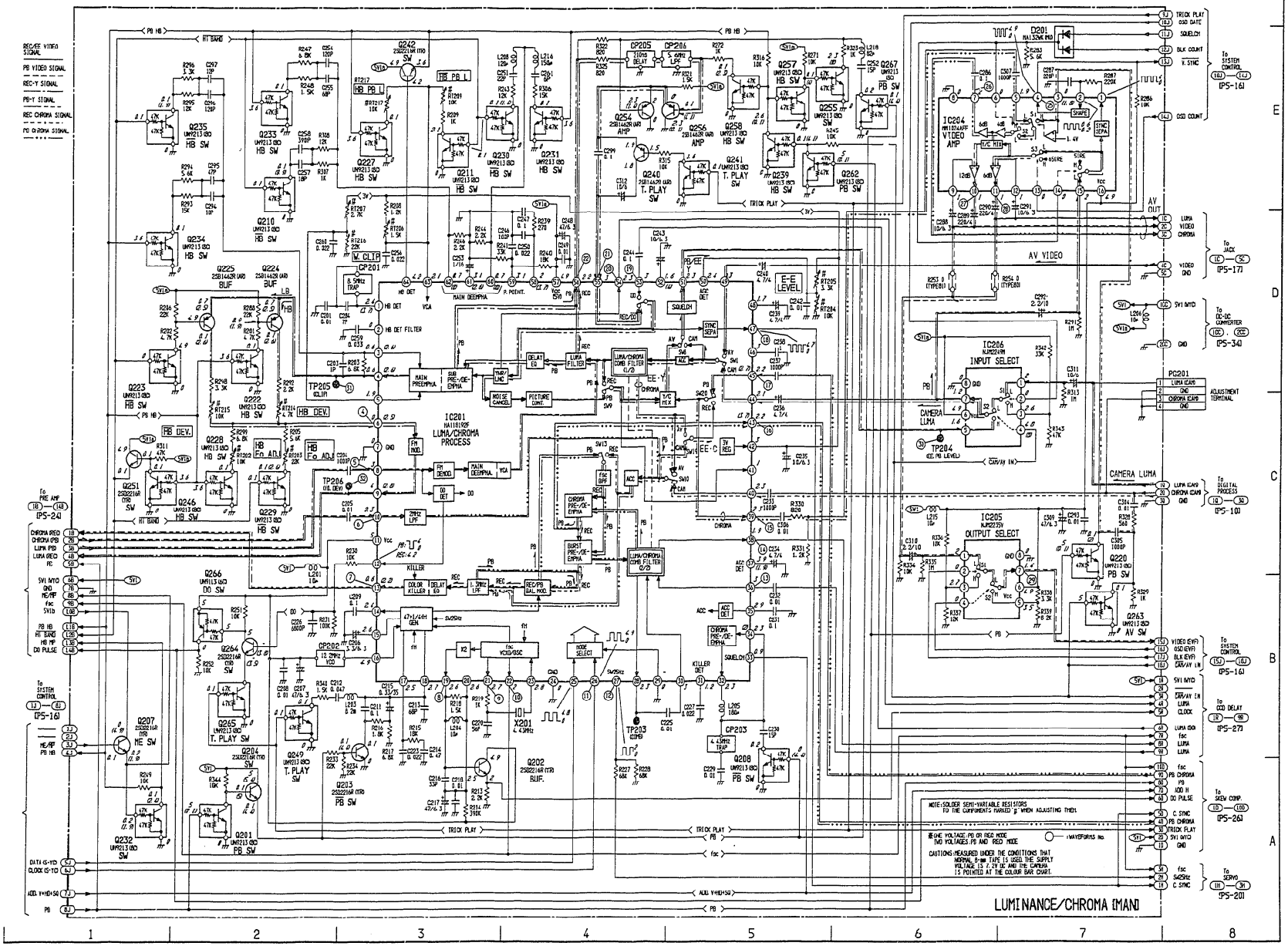
CCD DELAY [MAN] SCHEMATIC DIAGRAM



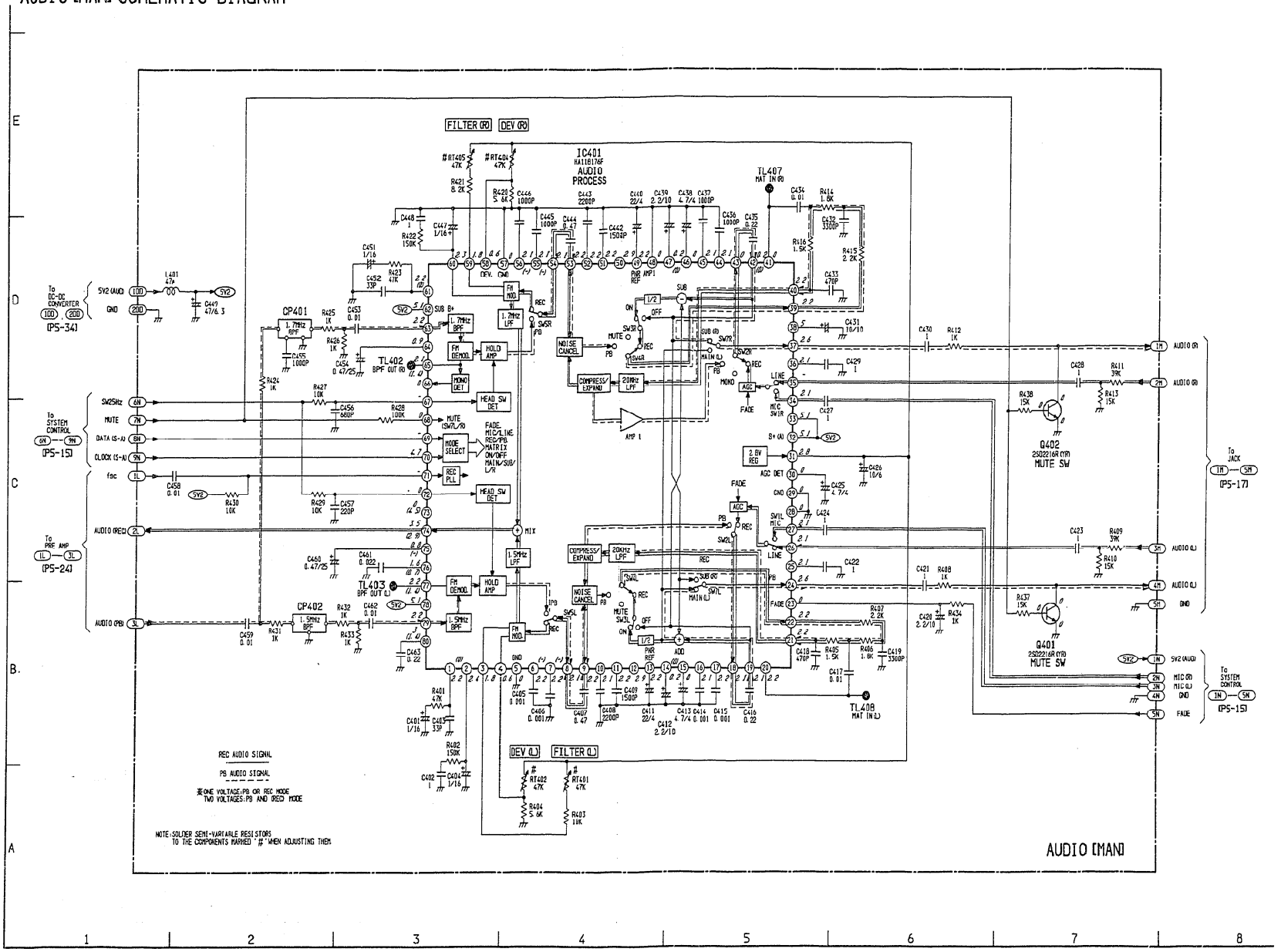
VIDEO WAVEFORMS

4-A IC201-6 150mVp-p 50mV/20.0μ sec.cm REC	12-A IC201-27 2.1Vp-p 0.5V/5.0msec.cm REC/PLAY	17-B IC201-45 180mVp-p 0.1V/20.0μ sec.cm PLAY	25-A IC204-4 5.0Vp-p 1V/5.0msec.cm REC/PLAY	30-A TP204(IC201-51) 1Vp-p 0.2V/20.0μ sec.cm REC
5-B IC201-8 520mVp-p 0.2V/5.0msec.cm PLAY	13-A IC201-36 120mVp-p 50mV/20.0μ sec.cm REC	18-A IC201-47 5.0Vp-p 1V/20.0μ sec.cm REC/PLAY	26-A IC204-7 80mVp-p 50mV/20.0μ sec.cm REC	30-B TP204(IC201-51) 1.0Vp-p 0.2V/20.0μ sec.cm PLAY
6-B IC201-10 400mVp-p 0.2V/20.0μ sec.cm PLAY	13-B IC201-36 190mVp-p 50mV/20.0μ sec.cm PLAY	19-A IC201-53 300mVp-p 0.1V/20.0μ sec.cm REC/PLAY	26-B IC204-7 1.3Vp-p 0.5V/20.0μ sec.cm PLAY	31-A TP205(IC201-4) 340mVp-p 0.1V/20.0μ sec.cm REC
7-A IC201-13 430mVp-p 0.1V/20.0μ sec.cm REC	14-A IC201-38 190mVp-p 50mV/20.0μ sec.cm REC	20-A IC201-54 600mVp-p 0.2V/20.0μ sec.cm REC/PLAY	27-A IC204-10 2.0Vp-p 0.5V/20.0μ sec.cm REC/PLAY	32-A TP206(IC201-9) 860mVp-p 0.5V/5.0msec.cm REC
8-A IC201-19 430mVp-p 0.1V/20.0μ sec.cm REC/PLAY	14-B IC201-38 280mVp-p 0.1V/20.0μ sec.cm PLAY	21-A IC201-55 300mVp-p 0.1V/20.0μ sec.cm REC/PLAY	28-A IC204-11 2.0Vp-p 0.5V/20.0μ sec.cm REC	33-B IC351-10 3.1Vp-p 1V/20.0μ sec.cm PLAY
9-A IC201-21 1.5Vp-p 0.5V/200nsec.cm REC/PLAY	15-A IC201-39 550mVp-p 0.2V/20.0μ sec.cm REC	22-A IC201-56 600mVp-p 0.2V/20.0μ sec.cm REC/PLAY	28-B IC204-11 2.0Vp-p 0.5V/20.0μ sec.cm PLAY	34-B IC351-15 350mVp-p 0.1V/20.0μ sec.cm PLAY
10-A IC201-22 530mVp-p 0.2V/20.0μ sec.cm REC/PLAY	15-B IC201-39 750mVp-p 0.2V/20.0μ sec.cm PLAY	23-A IC203-3 600mVp-p 0.2V/20.0μ sec.cm REC/PLAY	29-A IC205-7 2.2Vp-p 0.5V/20.0μ sec.cm REC	35-A IC351-18 330mVp-p 0.1V/200nsec.cm REC/PLAY
11-A IC201-26 5.8Vp-p 2V/20.0μ sec.cm REC/PLAY	16-B IC201-43 400mVp-p 0.1V/20.0μ sec.cm PLAY	24-A IC203-5 500mVp-p 0.2V/100nsec.cm REC/PLAY	29-B IC205-7 2.0Vp-p 0.5V/20.0μ sec.cm PLAY	

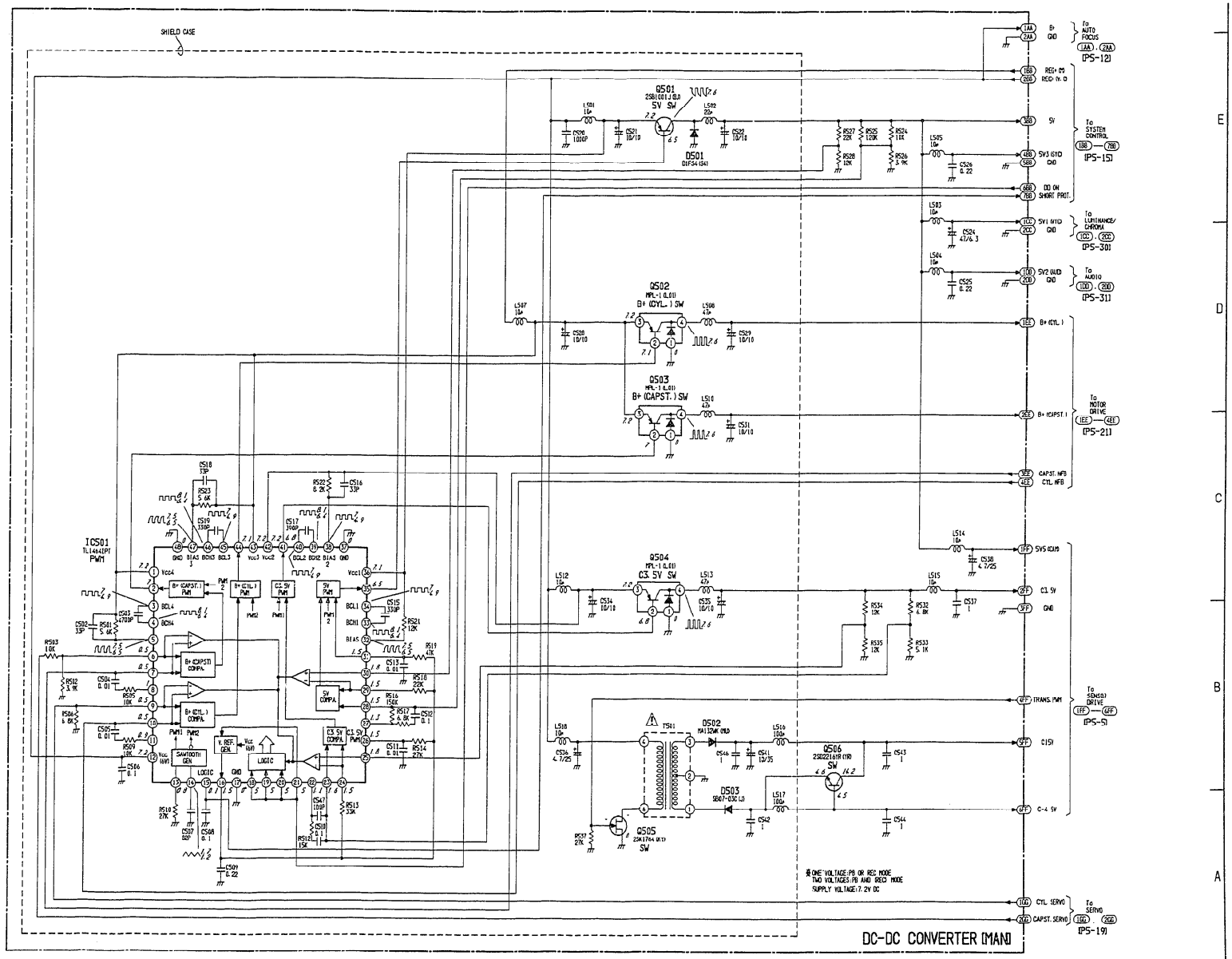
LUMINANCE/CHROMA [MAN] SCHEMATIC DIAGRAM



AUDIO [MAN] SCHEMATIC DIAGRAM



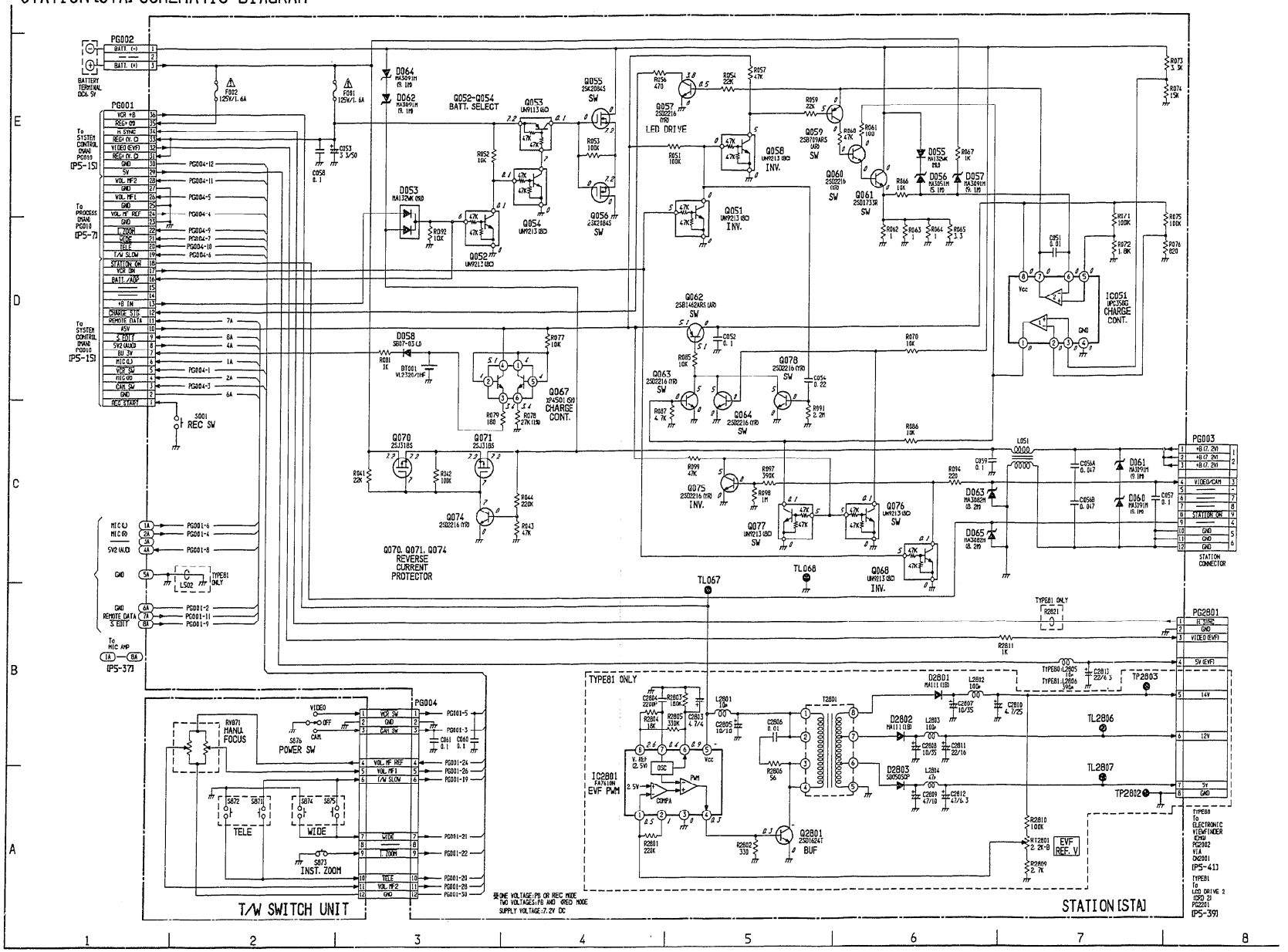
DC-DC CONVERTER [MAIN] SCHEMATIC DIAGRAM



1 2 3 4 5 6 7 8

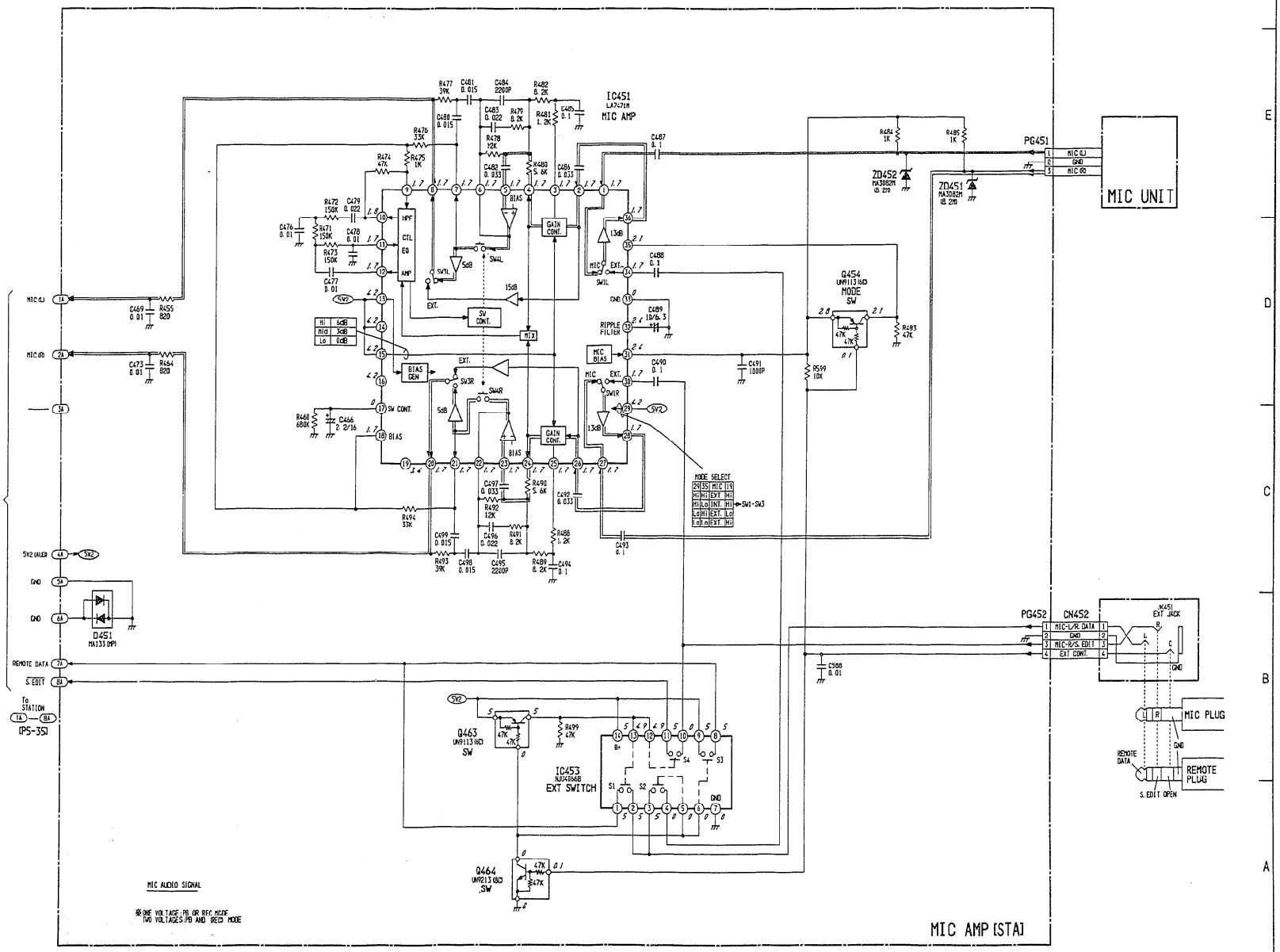
E D C B A

STATION [STA] SCHEMATIC DIAGRAM

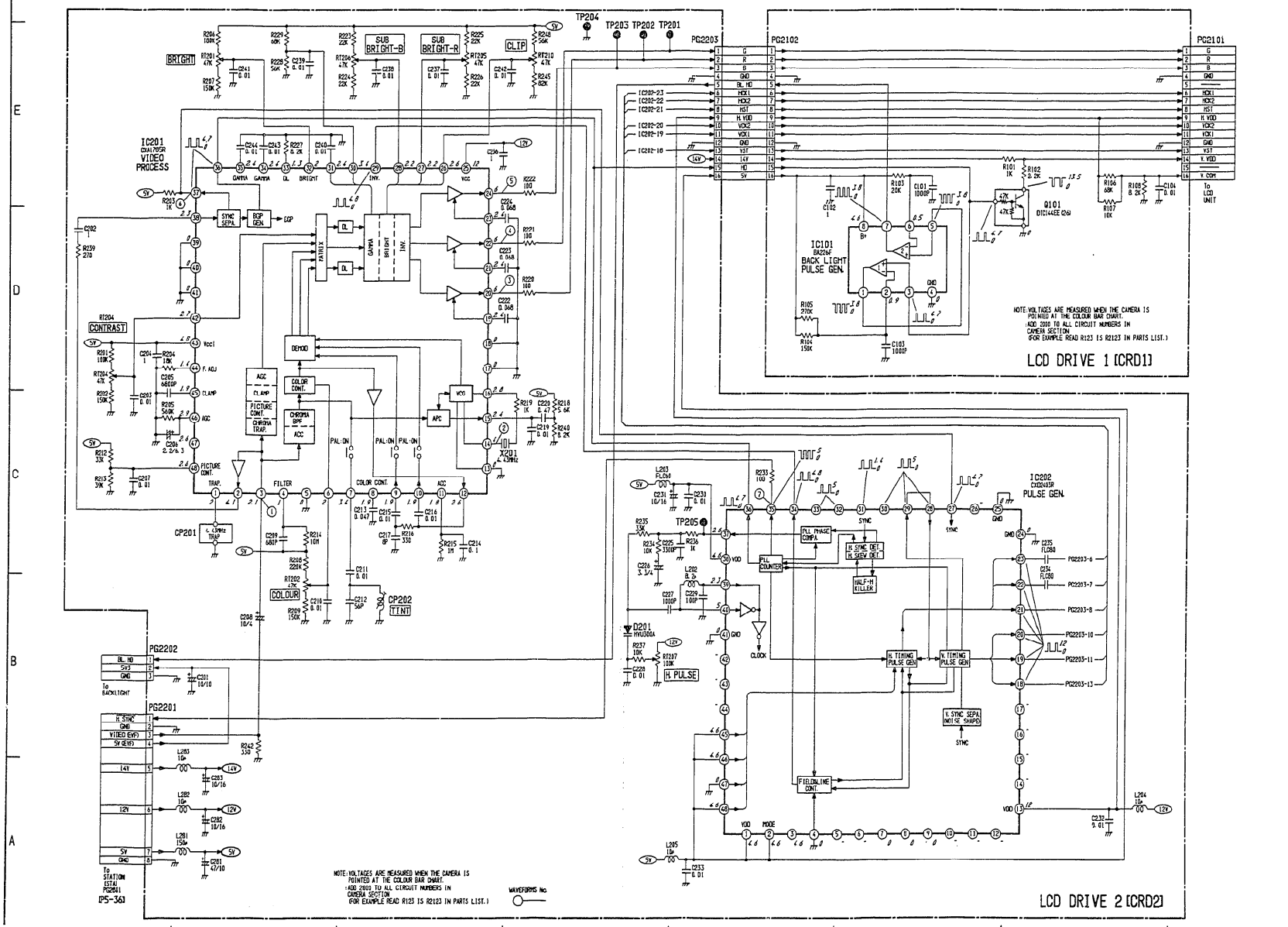


STATION 5-35 5-36 STATION

MIC AMP [STA] SCHEMATIC DIAGRAM



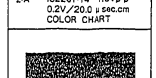
LCD DRIVE 1 [CRD1], LCD DRIVE 2 [CRD2] SCHEMATIC DIAGRAMS [TYPE81]



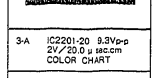
LCD DRIVE WAVEFORMS

1-A IC2201-3 0.69Vp-p 0.2V/20.0 μ sec.cm COLOR CHART

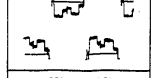
2-A IC2201-14 1.0Vp-p 0.2V/20.0 μ sec.cm COLOR CHART



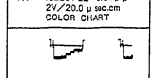
3-A IC2201-20 9.3Vp-p 2V/20.0 μ sec.cm COLOR CHART



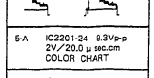
4-A IC2201-22 9.3Vp-p 2V/20.0 μ sec.cm COLOR CHART



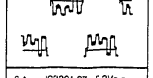
5-A IC2201-24 9.3Vp-p 2V/20.0 μ sec.cm COLOR CHART



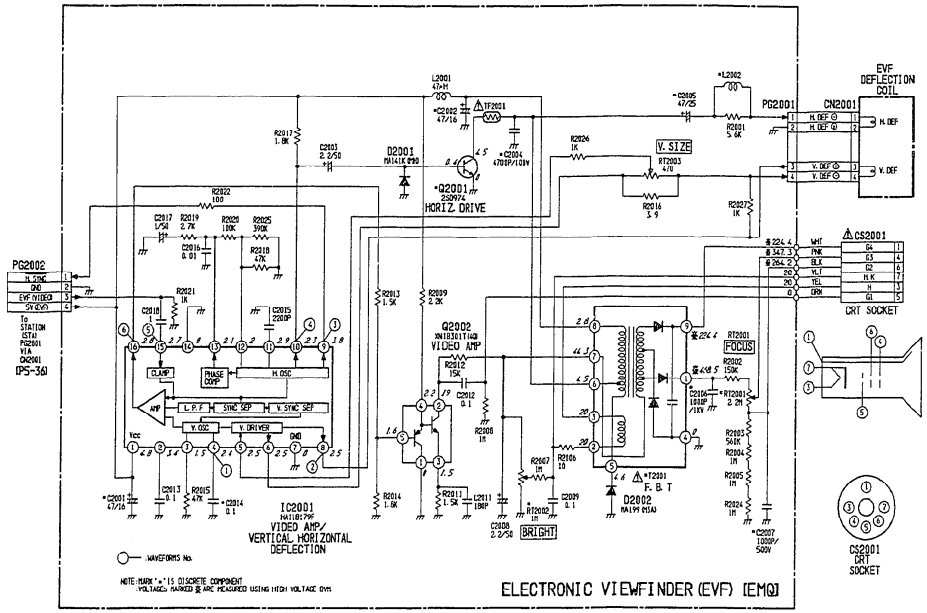
6-A IC2201-37 5.2Vp-p 1V/20.0 μ sec.cm COLOR CHART



7-A IC2202-35 5.2Vp-p 1V/20.0 μ sec.cm COLOR CHART

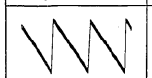


ELECTRONIC VIEWFINDER (EVF) [EMQ] SCHEMATIC DIAGRAM [TYPE80]

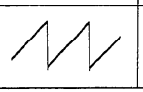


ELECTRONIC VIEWFINDER WAVEFORMS

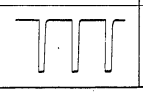
1-A IC2001-4 880mVp-p 0.2V/5.0msec.cm COLOR CHART



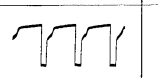
2-A IC2001-8 2.1Vp-p 0.5V/5.0msec.cm COLOR CHART



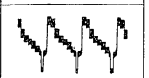
3-A IC2001-9 5.0Vp-p 1V/20.0μ sec.cm COLOR CHART



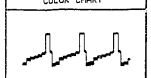
4-A IC2001-10 1.7Vp-p 0.5V/20.0μ sec.cm COLOR CHART



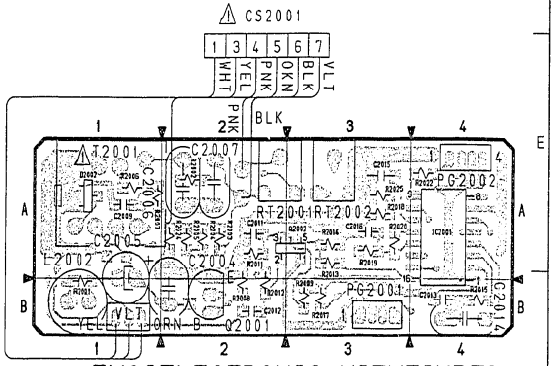
5-A IC2001-15 902mVp-p 0.2V/20.0μ sec.cm COLOR CHART



6-A IC2001-16 2.8Vp-p 1V/20.0μ sec.cm COLOR CHART

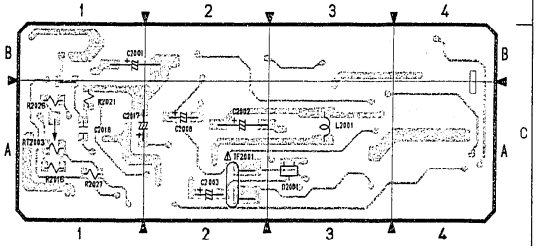


EMQ CIRCUIT BOARD



EMQ[ELECTRONIC VIEWFINDER] -SIDE A-

[PATTERN No.152035-1]



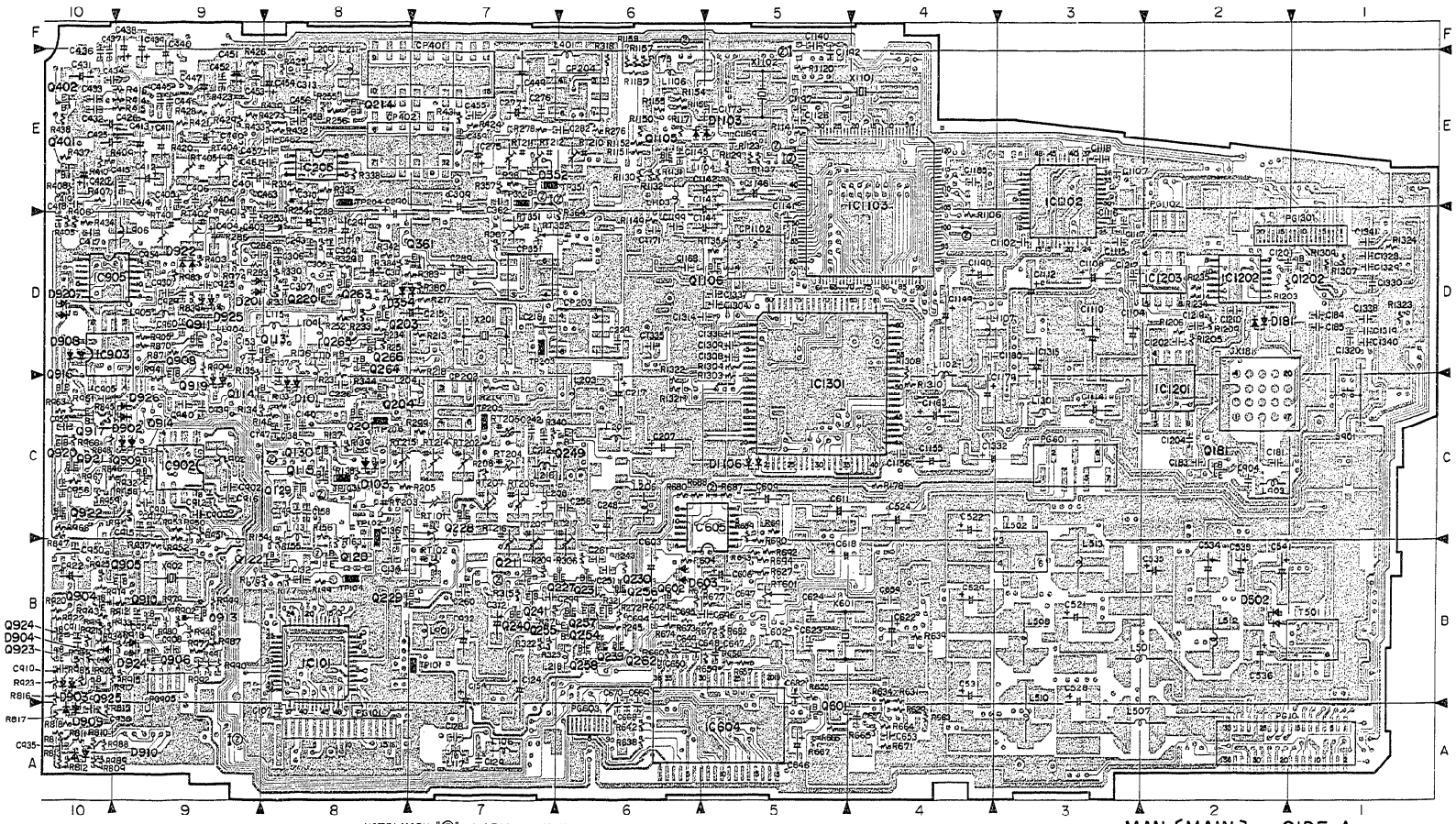
EMQ[ELECTRONIC VIEWFINDER] -SIDE B-

IDENTIFICATION OF PARTS LOCATION

EVF
[ELECTRONIC VIEWFINDER]

Symbol No.	Parts Location
C	
C2001	B-1B
C2002	B-2A
C2003	B-2A
C2004	A-2B
C2005	A-1B
C2006	A-2A
C2007	A-2A
C2008	B-2A
C2009	A-1A
C2011	A-2A
C2012	A-2B
C2013	A-4B
C2014	A-4B
C2015	A-3A
C2016	A-3A
C2017	B-2A
C2018	B-1A
D	
D2001	B-3A
D2002	A-1A
IC	
IC2001	A-4A
L	
L2001	B-3A
L2002	A-1B
PG	
PG2001	A-3B
PG2002	A-4A
Q	
Q2001	A-2B
Q2002	A-3A
R	
R2001	A-1B
R2002	A-2A
R2003	A-2A
R2004	A-2A
R2005	A-2A
R2006	A-1A
R2007	A-1A
R2008	A-2B
R2009	A-3B
R2011	A-2A
R2012	A-2B
R2013	A-3A
R2014	A-3A
R2015	A-4B
R2016	B-1A
R2017	A-3B
R2018	A-3A
R2019	A-3A
R2020	A-3A
R2021	B-1A
R2022	A-4A
R2024	A-2A
R2025	A-3A
R2026	B-1A
R2027	B-1A
RT	
RT2001	A-2A
RT2002	A-3A
RT2003	B-1A
T	
T2001	A-1A
TF	
TF2001	B-2A

MAN CIRCUIT BOARD [SIDE A]



NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.
: SOLDER SEMI-VARIABLE RESISTORS TO THE COMPONENTS MARKED "#" WHEN ADJUSTING THEN.

MAN [MAIN] — SIDE A —
[PATTERN No. JA1143-1]

MAN[MAIN]
DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks (*) in the circuit board diagrams.

SYMBOL No.	TYPE 80	TYPE 80'	TYPE 81	TYPE 81'
D925	×	×	○	○
Q913	○	×	○	×
R253	×	×	0Ω	0Ω
R254	0Ω	0Ω	×	×
R902	×	0Ω	×	0Ω

IDENTIFICATION OF PARTS LOCATION

MAN [MAIN]

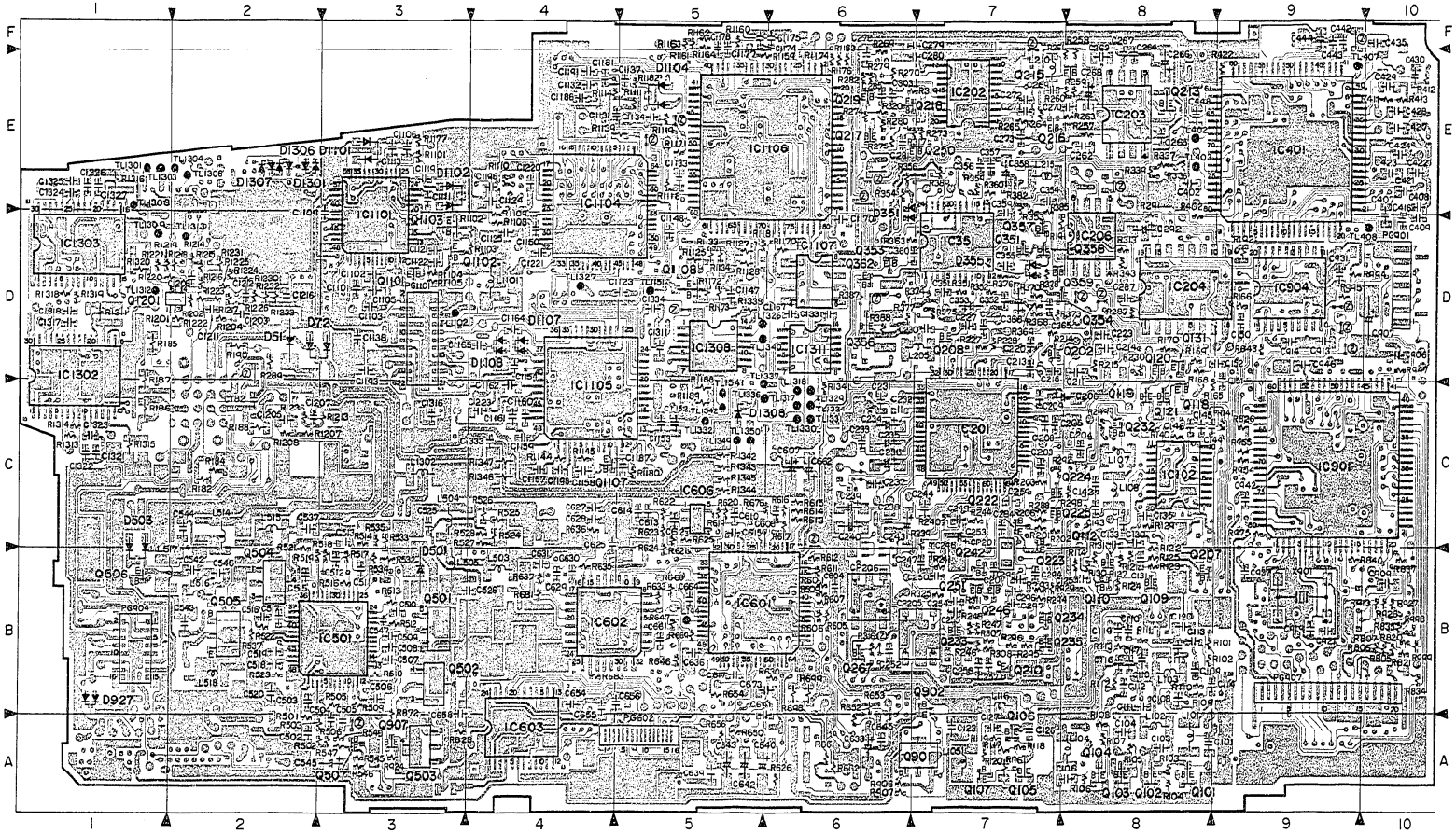
Symbol No.	Parts Location
C	
C101	B-8A
C103	B-8A
C104	B-8A
C106	B-8A
C107	A-8A
C108	B-8B
C109	B-8B
C110	B-8B
C111	B-8B
C112	B-8B
C113	B-8B
C114	B-8B
C115	B-8B
C116	B-8B
C117	B-8B
C118	B-8B
C119	B-8B
C120	B-8B
C123	B-7A
C124	A-7B
C125	B-8B
C126	B-7A
C127	B-7A
C128	A-7A
C129	A-7A
C130	B-8C
C131	B-9B
C132	A-8B
C133	B-8C
C134	A-8B
C135	B-8C
C136	A-8B
C137	A-8D
C138	A-8C
C140	A-8C
C141	B-8C
C142	B-8C
C143	B-8C
C144	B-8C
C145	B-8C
C146	B-8C
C147	A-8C
C149	A-8C
C150	B-9D
C151	B-9C
C152	B-9D
C153	A-9D
C154	A-7B
C158	A-8C
C181	A-2C
C182	B-2C
C183	A-2C
C184	A-1D
C185	A-1D
C201	B-7B
C203	B-7C
C204	B-8C
C205	B-7C
C206	B-7C
C207	A-6C
C208	B-7C
C209	B-7C
C211	B-8D
C212	A-7C
C213	B-7D
C214	B-8D
C215	A-7D
C216	B-7D
C217	A-6C
C218	A-7D
C220	B-7D
C223	B-8D
C225	B-7D
C226	A-8C
C227	B-7D
C229	A-6D
C230	B-7D
C231	B-6C
C232	B-6C
C233	B-6C
C234	B-6C
C235	B-6C
C236	B-6C
C237	B-6C
C238	B-6C
C239	B-6C
C240	B-6C
C242	A-7C
C243	B-6C
C244	B-7C
C246	B-7B
C247	B-7B
C248	A-6C
C249	B-7C
C250	B-7B
C251	A-6B
C252	B-6B
C253	B-7C
C254	B-7B
C255	B-7B
C256	A-6C
C257	B-7B
C258	B-7B
C259	B-7C
C260	A-7B
C261	A-6B
C262	B-8E
C263	B-8E
C264	B-8E
C265	B-8E
C266	B-8E
C267	B-8E
C268	B-8E
C269	B-7E
C270	B-8E
C271	B-7E
C272	B-7E
C273	B-7E
C275	A-7E
C276	A-7E
C277	A-7E
C278	B-6E
C279	B-6F
C280	B-6E
C281	B-6E
C282	A-6E
C284	B-7C
C285	B-6E
C286	A-9D
C287	B-8D
C288	A-8D
C289	A-7D
C290	A-8E
C291	A-8D
C292	B-8D
C293	A-8D
C294	B-7B
C295	B-7B
C296	B-7B
C297	B-7B
C299	A-7B
C303	B-6E
C304	A-8D
C305	A-8D
C306	A-8D
C307	A-8D
C309	A-7E
C310	A-8E
C311	A-8D
C312	A-7B
C313	A-8E
C351	B-7D
C352	B-7D
C353	B-7D
C354	B-7E
C355	B-7D
C356	B-7E
C357	B-7E
C358	B-7E
C359	B-7E
C360	B-6D
C362	A-7E
C365	B-7D
C366	B-7D
C401	A-9E
C402	B-8E
C403	A-9D
C404	A-9D
C405	A-9E
C406	A-9E
C407	B-10D
C408	B-10E
C409	B-10D
C411	A-9E
C412	A-9E
C413	A-9E
C414	A-9E
C415	A-9E
C416	B-10D
C417	A-10D
C418	A-10D
C419	A-10E
C420	A-10E
C421	B-10E
C422	B-10E
C423	B-10E
C424	B-10E
C425	A-10E
C426	A-10E
C427	B-10E
C428	B-10E
C429	B-10E
C430	B-10E
C431	A-10E
C432	A-10E
C433	A-10E
C434	A-10E
C435	B-10F
C436	A-10E
C437	A-10E
C438	A-9E
C439	A-9F
C440	A-9E
C442	B-9F
C443	B-9F
C444	B-9F
C445	A-9E
C446	A-9E
C447	A-9E
C448	B-8E
C449	A-7E
C451	A-9E
C452	A-9E
C453	A-9E
C454	A-8E
C455	A-7E
C456	A-8E
C457	A-8E
C458	A-8E
C459	A-7E
C460	A-9E
C461	A-8E
C462	A-8E
C463	A-8E
C502	B-2A
C503	B-2B
C504	B-3A
C505	B-3A
C506	B-3B
C507	B-3B
C508	B-3B
C509	B-3B
C510	B-3B
C511	B-3B
C512	B-3B
C513	B-3C
C515	B-2B
C516	B-2B
C517	B-2B
C518	B-2B
C519	B-2B
C520	B-2B
C521	A-3B
C522	A-4C
C524	A-4C
C525	B-3C
C526	B-4B
C528	A-3B
C529	A-4B
C531	A-4B
C534	A-2B
C535	A-2B
C536	A-2B
C537	B-2C
C538	A-2B
C541	A-2B
C542	B-2B
C543	B-2B
C544	B-2C
C545	B-3A
C546	B-2B
C547	B-3B
C603	A-6B
C604	B-6B
C606	A-5B
C607	B-6C
C608	B-6C
C609	A-5C
C610	B-5C
C611	A-5C
C612	B-5C
C613	B-5C
C614	B-5C
C615	B-5C
C617	B-5B
C618	A-5B
C622	A-4B
C623	A-5B
C624	A-5B
C625	B-4C
C627	B-4C
C628	B-4C
C629	B-4B
C630	B-4B
C631	B-4B
C636	B-5B
C638	B-6A
C639	B-5A
C640	B-5A
C641	B-6A
C642	D-5A
C643	B-5A
C645	B-6A
C646	A-5A
C647	A-5B
C648	A-6B
C649	A-6B
C650	A-6B
C653	A-4A
C654	B-4B
C655	B-4B
C656	B-5B
C657	A-4A
C658	B-3A
C659	A-4B
C661	B-5B
C662	B-6C
C664	B-5B
C668	A-6A
C669	A-6A
C670	A-6A
C673	B-5B
C682	A-5B
C694	A-6B
C695	A-6B
C696	A-5B
C697	A-5B
C901	A-9C
C902	A-9C
C903	A-9C
C904	A-2C
C905	A-10C
C906	B-10D
C907	B-10D
C908	A-9B
C909	B-10B
C910	A-10B
C911	A-10B
C912	A-9C
C913	B-9D
C914	B-9D
C915	A-9C
C916	A-9C
C917	A-9C
C919	B-9B
C921	B-9B
C922	A-10B
C925	A-9D
C929	A-9D
C930	A-9D
C931	B-9D
C932	A-7B
C934	A-9B
C935	A-10A
C936	A-10A
C937	B-9B
C939	A-9C
C940	A-9C
C942	B-9C
C946	B-9D
C950	A-10B
C954	A-9D
C955	A-10C
C956	A-10C
C960	A-9D
C1101	B-3D
C1102	B-3D
C1103	B-3D
C1104	A-3D
C1105	B-3D
C1106	B-3E
C1107	A-3E
C1108	A-3D
C1109	B-3E
C1110	A-3D
C1111	B-3E
C1112	A-3D
C1113	B-3E
C1114	A-3C
C1115	A-3D
C1116	A-3D
C1117	A-3D
C1118	A-3E
C1119	B-3E
C1120	A-3D
C1121	B-3D
C1122	B-3D
C1123	B-5D
C1124	B-4E
C1125	B-4D
C1126	A-5E
C1131	B-4E
C1132	B-4E
C1133	B-5E
C1134	B-5E
C1137	B-5E
C1138	B-3D
C1140	A-5F
C1141	A-5D
C1142	A-5E
C1143	A-5E
C1144	A-5D
C1145	A-6E
C1146	A-5E
C1147	B-5D
C1148	B-5D
C1149	A-4D
C1150	B-4D
C1152	B-5C
C1153	B-5C
C1154	B-4D
C1155	A-4C
C1156	A-4C
C1157	B-4C
C1158	B-4C
C1159	B-4C
C1160	B-4C
C1161	B-4C
C1162	B-4C
C1163	A-4C
C1164	B-4D
C1165	B-4D
C1167	B-6D
C1168	A-6D
C1169	A-5E
C1170	B-6D
C1171	A-6D
C1173	A-5E
C1174	B-5F
C1175	B-6F
C1177	B-5F
C1178	B-5F
C1179	A-4C
C1180	A-4D
C1181	B-4E
C1185	A-4E
C1186	B-4E
C1187	B-5C
C1190	A-4D
C1191	B-4E
C1192	A-5E
C1193	B-3D
C1196	B-4E
C1197	A-5E
C1198	B-4C
C1199	A-6D
C1201	A-2D
C1202	A-2D
C1203	B-2D
C1204	A-2C
C1205	B-2C
C1207	B-2C
C1208	B-2D
C1210	A-2D
C1211	B-2D
C1212	B-2D
C1216	B-2D
C1217	A-3D
C1219	A-2D
C1220	B-4E
C1221	B-4D
C1223	B-4C
C1304	A-5D
C1308	A-5D
C1309	A-5D
C1311	B-5D
C1314	A-6D
C1315	A-3D
C1316	B-3C
C1317	B-1D
C1318	B-1D
C1319	A-1D
C1320	A-1D
C1321	B-1C
C1322	B-1C
C1323	B-1C
C1324	B-1E
C1325	B-1E
C1326	B-1E
C1327	B-1E
C1328	A-1D
C1329	A-1D
C1330	A-1D
C1331	B-6D
C1332	A-4C
C1333	B-4C
C1334	B-5D
C1335	A-6D
C1336	A-5D
C1337	A-5D
C1338	A-1D
C1340	A-1D
C1341	A-1D
CP	
CP201	B-7B
CP202	A-7C
CP203	A-6D
CP204	A-6E
CP205	B-7B
CP206	B-6B
CP351	A-7D
CP401	A-7E
CP402	A-8E
CP1102	A-5D
D	
D51	B-2D
D72	B-2D
D101	A-8C
D103	A-8C
D181	A-2D
D201	A-9D
D351	B-6E
D354	A-8D
D355	B-7D
D501	B-3B
D502	A-2B
D503	B-1B
D603	A-6B
D902	A-9C
D903	A-10B
D904	A-10B
D908	A-10D
D909	A-10A
D910	A-10A
D920	A-10D
D922	A-9D
D924	A-9B
D925	A-9D
D926	A-9C
D927	B-1B
D1101	B-3E
D1102	B-3E
D1103	A-6E
D1104	B-5E
D1105	A-5C
D1107	B-4D
D1108	B-4D
D1301	B-2E
D1306	B-2E
D1307	B-2E
D1308	B-5C
IC	
IC101	A-8B
IC102	B-8C
IC201	B-7C
IC202	B-7E
IC203	B-8E
IC204	B-8D
IC205	A-8E
IC206	B-8D
IC351	B-7D
IC401	B-9E
IC501	B-3B
IC601	B-5B
IC602	B-4B
IC603	B-4A
IC604	A-5A
IC605	A-5C
IC606	B-5C
IC901	B-9C
IC902	A-9C
IC903	A-10D
IC904	B-9D
IC905	A-10D
IC1101	B-3E
IC1102	A-3F
IC1103	A-4E
IC1104	B-4E
IC1105	B-4C
IC1106	B-5E
IC1107	B-6D
IC1201	A-2C
IC1202	A-2D
IC1203	A-2D
IC1301	A-5C
IC1302	B-1D
IC1303	3-1D
IC1308	B-5D
IC1311	B-6D
JK	
JK181	A-2C
L	
L101	B-8A
L102	B-8A
L103	B-8B
L104	B-8A
L105	B-7A
L106	A-7A
L107	B-8C
L108	B-8C
L109	A-8D
L110	A-8D
L113	A-8C
L115	A-8D
L116	B-7B
L117	A-7A
L201	A-6C
L203	A-6C
L204	A-7C
L205	B-7D
L206	A-6C
L208	A-7C
L209	A-8E
L210	B-7E
L211	A-8E
L215	B-7E
L216	A-7C
L218	A-6B
L401	A-6E
L501	A-3B
L502	A-3B
L503	B-4B
L504	B-3C
L505	B-3B
L507	A-3A
L508	A-3B
L510	A-3A
L512	A-2B
L513	A-3B
L514	B-2C
L515	B-2C
L516	B-2B
L517	B-1B
L518	B-2B
L602	A-5B
L901	A-7B
L902	A-9C
L903	A-2C
L904	A-9D
L905	A-9D
L906	A-9D
L1101	5-4D
L1102	A-4C
L1103	A-6E
L1104	A-5E
L1106	A-6E
L1107	A-4D
L1301	A-3C
L1302	B-3C
PG	
PG10	A-2A
PG101	A-8A
PG601	A-3C
PG602	B-5A
PG603	A-6A
PG901	B-10D
PG905	A-9B
PG904	B-1B
PG907	B-9B
PG1101	B-3D
PG1102	A-2D
PG1301	A-1D
Q	
Q101	B-8A
Q102	B-8A
Q103	B-8A
Q104	B-8A
Q105	B-7A
Q106	B-7A
Q107	B-7A
Q109	B-8B
Q110	B-8B
Q112	B-8B
Q113	A-8D
Q114	A-9C
Q115	A-8C
Q118	B-8C
Q119	B-8C
Q120	B-8D
Q121	B-8C
Q122	A-8B
Q128	A-8B
Q129	A-8C
Q130	A-8C
Q131	B-8D
Q181	A-2C
Q201	A-8C
Q202	B-7D
Q203	A-8D
Q204	A-8C
Q207	B-8B
Q208	B-7D
Q210	B-7B
Q211	A-7B
Q213	B-8E
Q214	A-8E
Q215	B-8E
Q216	B-7E
Q217	B-6E
Q218	B-6E
Q219	B-6E
Q220	A-8D
Q222	B-7C
Q223	B-7C
Q224	B-7C
Q225	B-7C
Q227	A-6B
Q228	A-7C
Q229	A-8B
Q230	A-6B
Q231	A-6B
Q232	B-8C
Q233	B-7B
Q234	B-7B
Q235	B-7B
Q239	A-6B
Q240	A-7B
Q241	A-7B
Q242	B-7B
Q245	B-7B
Q249	A-6C
Q250	B-6E
Q251	B-7B
Q254	A-6B
Q255	A-6B
Q256	A-6B
Q257	A-6B
Q258	A-6B
Q262	A-6B
Q263	A-8D
Q264	A-8D
Q265	A-8D
Q266	A-8D
Q267	B-6B
Q351	B-7D
Q352	A-7E
Q353	B-6D
Q354	B-7D
Q356	B-6D
Q357	B-7D
Q358	B-7D
Q359	B-7D
Q361	A-7D
Q362	B-6D
Q401	A-10E
Q402	A-10E
Q501	B-3B
Q502	B-3B
Q503	B-3A
Q504	B-2B
Q505	B-2B
Q506	B-1B
Q507	B-3A
Q601	A-5A
Q602	A-6B
Q901	B-7A
Q902	B-7B
Q904	A-10B
Q905	A-9B
Q906	A-9B
Q907	B-3A
Q908	A-9D
Q909	A-9C
Q910	A-9B
Q911	A-9D
Q913	A-9B
Q914	A-9C
Q916	A-10C
Q917	A-10C
Q919	A-9C
Q920	A-10C
Q921	A-10C
Q922	A-10C
Q923	A-10B
Q924	A-10B
Q925	A-10B
Q1101	B-3D
Q1102	B-3D
Q1103	B-3D
Q1105	A-6E
Q1106	A-5D
Q1107	B-4C
Q1108	B-5D
Q1201	B-2D
Q1202	A-1D
R	
R101	B-8B
R102	B-8B
R103	B-8A
R104	B-8A
R105	B-8A
R106	B-7A
R107	B-8A
R108	B-8A
R109	B-8B
R110	B-8B
R111	B-8B
R112	B-8B
R113	B-8B
R114	B-8B
R116	B-7A
R117	B-7A
R118	B-7A
R119	B-7A
R120	B-7A
R121	B-8B
R122	B-8B
R123	B-8B
R124	B-8B
R125	B-8B
R127	B-8B
R129	B-8C
R130	B-8B
R131	B-8B
R133	A-8C
R134	A-9C
R135	A-9C
R136	A-8D
R137	A-8C
R138	A-8C
R139	A-8C
R140	B-8C
R141	B-9C
R146	A-8C
R154	A-8B
R155	A-8B
R156	A-8C
R163	A-8B
R165	B-8C
R166	B-9D
R168	B-8D
R169	B-8D
R170	B-8D
R176	A-8B
R177	A-8B
R178	A-4C
R182	B-2C
R184	B-2C
R185	B-1D
R186	B-1C
R187	B-1D
R188	B-2C
R190	B-2D
R191	B-7D
R192	B-9D
R199	A-8B
R201	B-7C
R202	B-7C
R203	B-7C
R205	A-8C
R206	B-7C
R208	A-7C
R209	A-7B
R213	A-7D
R214	B-7D
R215	B-8D
R216	A-8D
R217	A-7D
R218	A-7D
R219	A-7C
R227	B-7D
R228	B-7D
R230	B-8D
R231	A-8C
R233	A-8D
R234	A-8D
R239	B-7C
R240	B-7C
R241	B-7B
R243	A-6B
R244	B-7C
R245	A-6B
R246	B-7B
R247	B-7B
R248	B-7B
R249	B-8C
R251	A-8D
R252	A-8D
R253	A-8D
R254	A-8E
R255	A-8E
R256	A-8E
R257	B-8E
R258	B-8F
R259	B-8E
R260	B-8E
R261	B-7F
R263	B-8E
R264	B-7E
R265	B-7E
R269	B-6F
R270	B-6E
R271	A-7B
R272	A-6B
R273	B-7E
R274	B-6E
R275	B-6E
R276	A-6E
R278	A-7E
R279	B-6E
R280	B-6E
R282	B-6E
R283	A-9D
R286	A-9D
R287	B-8D
R288	B-7C
R289	B-2D
R291	B-8E
R292	B-7C
R293	B-7B
R294	B-7B
R295	B-7B
R296	B-7B
R298	B-8C
R299	A-7C
R306	A-6B
R307	B-7B
R308	B-7B
R311	B-7B
R313	B-8D
R315	A-7B
R316	B-6B
R317	B-6E
R318	A-6E
R319	B-6E
R320	B-6E
R321	A-6B
R322	A-7B
R323	A-7B
R325	B-7B
R328	A-8D
R329	A-8D
R330	A-8D
R331	A-8D
R334	A-8E
R335	A-8E
R336	B-8E
R337	B-8E
R338	A-8E
R339	B-8E
R340	A-7C
R342	A-8D
R343	B-8D
R344	A-8C
R351	B-7D
R352	B-7D
R353	B-7E
R354	B-6E
R356	B-6E
R357	A-7E
R359	B-7E
R360	B-7E
R361	A-7E
R363	B-6D
R364	A-6E
R367	A-7D
R368	B-7D
R369	B-7D
R370	B-7D
R373	B-7D
R374	B-7D
R375	B-7D
R376	B-7D
R377	B-6D
R378	B-7D
R380	A-7D
R382	B-7E
R383	A-8D
R384	A-8D
R385	B-7E
R387	B-6D
R388	B-6D
R389	B-7E
R401	A-9E
R402	B-8E
R403	A-9D
R404	A-9E
R405	A-10D
R406	A-10D
R407	A-10E
R408	A-10E
R409	A-10E
R410	A-10E
R411	B-10E
R412	B-10E
R413	B-10E
R414	A-9E
R415	A-9E
R416	A-9E
R420	A-9E
R421	A-9E
R422	B-9E
R423	A-9E
R424	A-7E
R425	A-8E
R426	A-9E
R427	A-9E
R428	A-9E
R429	A-9E
R430	A-8E
R431	A-7E
R432	A-8E
R433	A-9E
R434	A-10D
R437	A-10E
R438	A-10E
R501	B-2A
R502	B-2A
R503	B-3A
R505	B-3B
R506	B-3A
R509	B-3B
R510	B-3B
R512	B-3B
R513	B-3B
R514	B-3C
R516	B-3B
R517	B-3B
R518	B-3B
R519	B-2B
R521	B-2B
R522	B-2B
R523	B-2B
R524	B-4C
R525	B-4C
R526	B-4C
R527	B-4C
R528	B-4C
R532	B-3B
R533	B-3C
R534	B-3B
R535	B-3C
R537	B-2B
R545	B-3A
R546	B-3A
R547	B-3A
R548	B-3A
R601	B-6B
R602	A-6B
R604	A-6B
R605	B-6B
R606	B-6B
R607	B-6B
R609	B-6B
R611	B-6B

IDENTIFICATION OF PARTS LOCATION

MAN [MAIN]

Symbol No.	Parts Location
R612	B-6B
R613	B-6C
R614	B-6C
R615	B-6C
R616	B-6C
R617	B-6C
R619	B-5C
R620	B-5C
R621	B-5C
R622	B-5C
R623	B-5C
R624	B-5B
R625	B-5C
R626	B-6A
R627	A-5B
R628	B-3A
R629	A-4A
R630	B-6B
R631	A-4B
R633	B-5B
R634	A-4B
R635	B-4B
R636	B-4C
R637	B-4B
R638	A-6A
R639	A-4B
R642	A-6A
R646	B-5B
R647	B-5B
R650	B-5A
R652	B-6A
R653	B-6B
R654	B-5B
R655	A-5B
R656	B-5A
R657	A-5B
R658	A-5B
R659	A-5B
R660	A-6B
R661	B-6A
R662	B-6A
R663	A-4A
R664	A-4A
R665	A-4A
R666	A-5A
R667	A-5A
R668	B-5B
R669	B-5B
R671	A-4A
R672	A-5B
R673	A-6B
R674	A-6B
R675	A-6B
R676	B-5C
R677	A-5B
R680	A-6C
R681	B-4B
R682	A-5B
R683	B-4B
R687	A-5C
R688	A-6C
R689	A-5C
R690	A-5B
R691	A-5C
R692	A-5B
R693	A-5B
R694	A-5B
R698	B-6B
R699	B-6B
R805	B-10B
R806	B-10B
R807	B-10B
R809	A-10A
R810	A-10A
R811	A-10A
R812	A-10A
R813	A-10A
R814	A-10A
R815	A-10A
R816	A-10B
R817	A-10A
R818	A-10A
R820	B-10B
R821	B-10B
R826	B-9C
R834	B-10B
R835	B-10B
R837	B-10B
R839	A-9D
R840	B-9B
R843	B-9D
R845	A-10C
R846	A-10C
R847	A-10C
R848	A-10C
R870	A-9D
R871	A-9D
R872	B-3A
R902	A-9B
R904	A-9D
R905	A-9D
R906	B-6A
R907	B-6A
R911	A-9C
R912	A-9B
R913	B-10B
R914	A-10B
R915	A-9B
R917	A-10B
R918	A-9B
R919	A-10B
R920	A-10B
R921	A-10B
R922	A-10B
R923	A-10B
R924	B-3A
R925	A-10B
R926	B-10B
R927	B-10B
R928	A-10B
R929	B-7B
R932	A-10C
R933	A-10B
R934	A-10B
R937	A-9B
R941	A-9C
R943	A-10B
R946	A-9B
R947	B-10D
R949	A-9B
R950	A-9C
R951	A-9C
R952	A-9B
R953	A-9C
R954	B-9C
R955	B-9C
R958	A-9C
R959	A-10C
R961	A-10C
R963	A-10C
R966	A-10C
R967	A-10C
R968	A-10C
R974	A-9D
R975	B-9C
R977	A-9B
R979	A-9B
R980	A-9B
R983	A-9D
R984	A-10B
R985	A-10B
R987	A-9B
R988	A-10A
R989	A-10A
R990	A-9B
R991	A-9B
R992	A-9B
R994	B-9D
R995	B-9D
R998	B-10B
R999	B-10B
R1101	B-3E
R1102	B-4D
R1103	B-4D
R1104	B-3D
R1105	B-3D
R1106	A-4D
R1108	B-4D
R1109	B-4D
R1110	B-4E
R1111	B-5E
R1114	B-4E
R1118	B-5E
R1119	B-5E
R1120	A-5E
R1123	A-5E
R1125	B-5D
R1127	B-5D
R1128	B-5D
R1129	A-5E
R1130	A-6E
R1131	A-6E
R1132	A-6E
R1133	B-5D
R1134	B-5D
R1135	A-5D
R1137	A-5E
R1139	B-5E
R1141	A-5E
R1144	B-4C
R1145	B-4C
R1149	A-6D
R1150	A-6E
R1151	A-6E
R1152	A-6E
R1153	B-6E
R1154	A-6E
R1155	A-6E
R1156	A-6E
R1157	A-6E
R1158	A-6E
R1159	B-5E
R1160	B-5F
R1161	B-5F
R1162	B-5F
R1163	B-5F
R1164	B-5F
R1170	B-6D
R1171	A-6E
R1172	B-5D
R1173	B-5D
R1174	B-6E
R1175	A-6E
R1176	B-6E
R1177	B-3E
R1180	B-5C
R1181	B-5D
R1182	B-5E
R1187	A-6E
R1188	B-5C
R1189	B-5C
R1201	B-2D
R1202	B-2D
R1203	A-2D
R1204	B-2D
R1205	A-2D
R1206	A-2D
R1207	B-2C
R1208	B-2C
R1209	A-2D
R1213	B-3C
R1214	B-2D
R1215	B-2D
R1216	B-2D
R1217	B-2D
R1218	B-2D
R1219	B-1D
R1220	B-1D
R1221	B-1D
R1222	B-2D
R1223	B-2D
R1224	B-2D
R1225	B-2D
R1226	B-2D
R1230	B-2D
R1231	B-2D
R1232	B-2D
R1233	B-2D
R1234	A-2D
R1235	A-2D
R1236	B-2C
R1303	A-5C
R1304	A-5D
R1307	A-1D
R1308	A-4D
R1309	A-1D
R1310	A-4C
R1311	B-1D
R1313	B-1C
R1314	B-1C
R1315	B-1C
R1316	B-1E
R1318	B-1D
R1319	B-1D
R1320	B-1D
R1321	A-6C
R1322	A-6C
R1323	A-1D
R1324	A-1D
R1338	B-5D
R1341	B-6C
R1342	B-5C
R1343	B-5C
R1344	B-5C
R1345	B-5C
R1346	B-4C
R1347	B-4C
RT	
RT101	A-7C
RT102	A-7B
RT202	A-7C
RT203	A-7C
RT204	A-7C
RT205	A-7C
RT206	A-7C
RT207	A-7C
RT209	A-7B
RT210	A-6E
RT211	A-7E
RT212	A-7E
RT214	A-7C
RT215	A-8C
RT216	A-7B
RT217	A-6B
RT351	A-7D
RT352	A-7D
RT401	A-9D
RT402	A-9D
RT404	A-9E
RT405	A-9E
RT601	A-5B
S	
S901	A-1C
T	
T501	A-1B
TL	
TL144	B-5B
TL402	B-8E
TL403	B-8E
TL407	B-9E
TL408	B-10D
TL1102	B-3D
TL1151	B-5D
TL1301	B-1E
TL1303	B-1E
TL1304	B-2E
TL1306	B-2E
TL1308	B-1E
TL1309	B-1D
TL1312	B-1D
TL1313	B-2D
TL1317	B-6C
TL1318	B-6C
TL1324	B-6C
TL1326	B-5D
TL1327	B-4D
TL1329	B-6C
TL1330	B-6C
TL1331	B-6C
TL1332	B-5C
TL1336	B-5C
TL1337	B-5C
TL1340	B-5D
TL1341	B-5C
TL1342	B-5C
TL1349	B-5C
TL1350	B-5C
TP	
TP101	A-7B
TP102	A-8B
TP103	A-8C
TP104	A-8B
TP203	A-7D
TP204	A-8E
TP205	A-7C
TP206	A-8C
TP351	A-7E
TP352	A-7E
X	
X201	A-7D
X601	A-5B
X901	B-9B
X902	A-9B
X1101	A-4E
X1102	A-5E

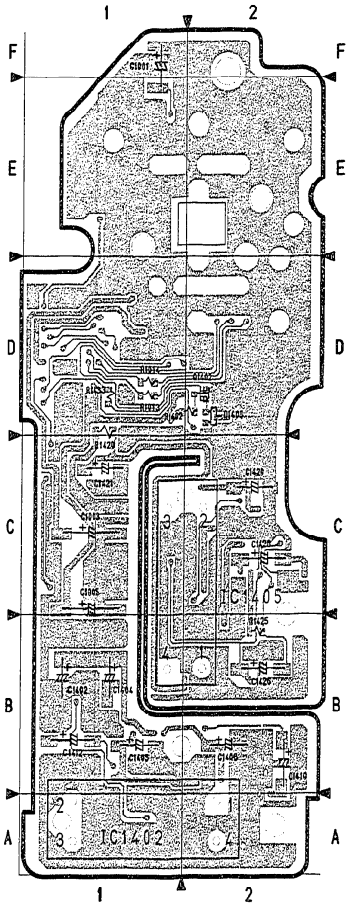
MAN CIRCUIT BOARD [SIDE B]



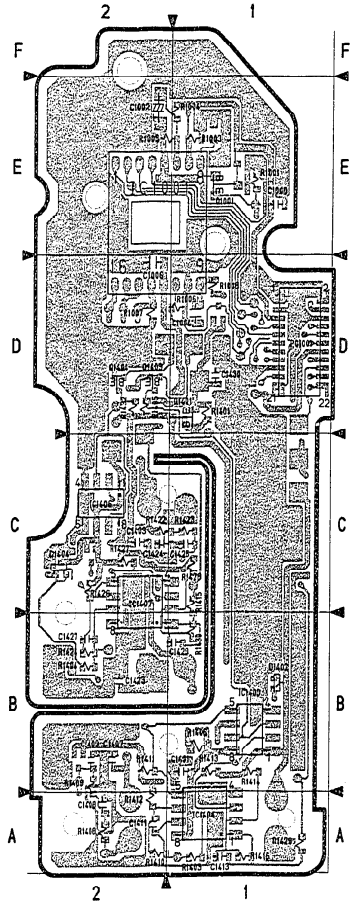
NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

MAN [MAIN] — SIDE B —
(PATTERN No. JA1143-1)

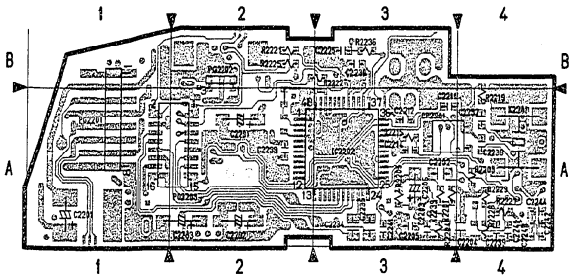
SPE. CRD2. CRD1 CIRCUIT BOARDS



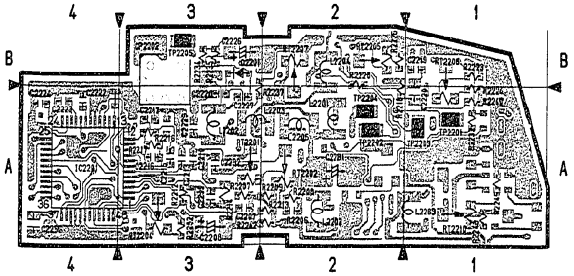
SPE[SENSOR/GYRO]
-SIDE A-
[PATTERN No.JA1172-1]



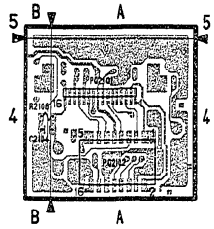
SPE[SENSOR/GYRO]
-SIDE B-



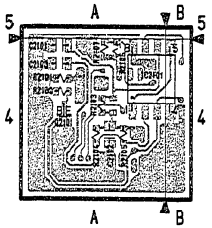
CRD2[LCD DRIVE 2] -SIDE A-
[PATTERN No.155276-5]



CRD2[LCD DRIVE 2] -SIDE B-



CRD1[LCD DRIVE 1]
-SIDE A-
[PATTERN No.155276-5]



CRD1[LCD DRIVE 1]
-SIDE B-

IDENTIFICATION OF PARTS LOCATION

SPE
[SENSOR/GYRO]

Symbol No.	Parts Location
C	
C1001	A-1F
C1002	B-2E
C1003	A-1C
C1004	B-1D
C1005	A-1C
C1006	B-2D
C1008	B-1E
C1401	B-1B
C1402	A-1B
C1403	B-2C
C1404	A-1B
C1405	A-1B
C1406	A-2B
C1407	B-2B
C1408	B-2A
C1409	B-2B
C1410	A-2B
C1411	B-2A
C1412	A-1B
C1413	B-1A
C1420	A-2C
C1421	A-1C
C1423	B-2B
C1424	B-2C
C1425	B-1C
C1426	A-2B
C1427	B-2B
C1428	A-2C
C1429	B-1B
C1430	B-1D
D	
D1402	B-1B
D1404	B-2C
D1405	A-2D
IC	
IC1001	B-2E
IC1402	A-1A
IC1403	B-1B
IC1404	B-1A
IC1405	A-2C
IC1406	B-2C
IC1407	B-2C
PG	
PG1001	B-1D
Q	
Q1001	B-1E
Q1401	B-1D
Q1402	A-2D
Q1403	B-2D
Q1404	B-2D
R	
R1001	B-1E
R1003	B-1E
R1004	B-1E
R1005	B-2E
R1006	B-1D

Symbol No.	Parts Location
R1007	B-2D
R1008	B-1D
R1013	A-1D
R1014	A-1D
R1401	B-1D
R1402	A-2D
R1403	B-1A
R1404	B-2B
R1405	B-2D
R1406	B-1B
R1408	B-2A
R1409	B-2B
R1410	B-2A
R1411	B-2B
R1412	B-2A
R1413	B-1B
R1414	B-1B
R1415	B-1C
R1416	B-1A
R1420	A-1D
R1422	B-2C
R1423	B-1C
R1424	B-2B
R1425	A-2B
R1426	B-2C
R1427	B-2C
R1428	B-1C
R1429	B-1A
R1430	B-1B
R1432	B-2D
R1433	A-1D

CRD 2
[LCD DRIVE 2]

Symbol No.	Parts Location
C	
C2201	A-1A
C2202	A-3A
C2203	A-3A
C2204	A-4A
C2205	A-3A
C2206	A-3A
C2207	B-3A
C2208	B-3A
C2209	B-3A
C2210	B-3A
C2211	A-3A
C2212	A-3A
C2213	B-3A
C2214	A-3A
C2215	B-3A
C2216	B-3A
C2217	B-3A
C2219	B-1B
C2220	B-1A
C2222	B-4A
C2223	B-4A
C2224	B-4A
C2225	A-3B
C2226	B-3B
C2227	B-3A
C2228	B-3A
C2229	B-3A
C2230	A-3B
C2231	A-2A
C2232	B-3A
C2233	A-2A
C2234	A-3A
C2235	A-3A
C2236	B-4A
C2237	A-4A
C2238	A-4A
C2239	A-4A
C2240	A-4A
C2241	A-3A
C2242	A-4A
C2243	A-4A
C2244	A-4A
C2281	B-2A
C2282	A-2A
C2283	A-2A
CP	
CP2201	A-3A
CP2202	B-3B
D	
D2201	B-3B
IC	
IC2201	B-4A
IC2202	A-3A
L	
L2202	B-3A
L2203	B-2A

Symbol No.	Parts Location
L2204	B-2B
L2205	B-2A
L2281	B-2A
L2282	B-2A
L2283	B-1A
PG	
PG2201	A-1A
PG2202	A-2B
PG2203	A-1A
R	
R2201	A-3A
R2202	B-3A
R2203	A-4A
R2204	A-3A
R2205	A-3A
R2206	B-2A
R2207	B-3A
R2208	B-2A
R2209	B-2A
R2212	B-3A
R2213	B-2A
R2214	B-3A
R2215	A-3A
R2216	B-3A
R2217	B-3A
R2218	B-2A
R2219	A-4A
R2220	B-2B
R2221	A-2B
R2222	A-3B
R2223	B-1B
R2224	B-1A
R2225	A-2B
R2226	B-2B
R2227	A-4A
R2228	A-4A
R2229	A-4A
R2233	B-1A
R2234	B-3B
R2235	B-3B
R2236	A-3B
R2237	B-3A
R2239	A-3A
R2240	B-1A
R2242	B-2A
R2245	B-1A
R2248	B-1A
RT	
RT2006	B-1D
RT2201	B-3A
RT2202	B-2A
&T2204	B-3A
RT2205	B-2B
RT2207	B-2B
RT2210	B-1A
TP	
TP2201	B-1A

Symbol No.	Parts Location
TP2202	B-2A
TP2203	B-1A
TP2204	B-2A
TP2205	B-3B
X	
X2201	A-4A

CRD 1
[LCD DRIVE 1]

Symbol No.	Parts Location
C	
C2101	B-4A
C2102	B-4A
C2103	B-4A
C2104	A-4B
IC	
IC2101	B-4A
PG	
PG2101	A-4A
PG2102	A-4A
Q	
Q2101	B-4A
R	
R2101	B-4A
R2102	B-4A
R2103	B-4A
R2104	B-4A
R2105	B-4A
R2106	B-4A
R2107	B-4A
R2108	A-4B

IDENTIFICATION OF PARTS LOCATION

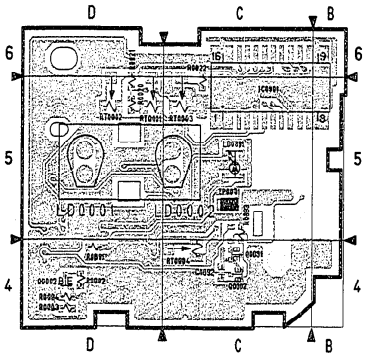
STA
[STATION]

Symbol No.	Parts Location
C	
C51	A-4B
C52	A-4A
C53	A-5A
C54	A-4A
C56A	B-8A
C56B	B-8A
C57	B-3B
C58	B-8B
C59	A-6B
C60	A-4A
C61	A-5A
C466	A-3C
C469	B-4C
C473	B-3C
C476	B-3C
C477	B-3C
C478	B-3C
C479	B-3C
C480	B-4C
C481	B-4C
C482	B-4C
C483	B-4C
C484	B-4C
C485	B-4D
C486	B-3D
C487	B-4D
C488	B-3D
C489	A-4C
C490	B-3D
C491	B-3D
C492	B-3D
C493	B-3D
C494	B-3D
C495	B-3C
C496	B-3C
C497	B-3C
C498	B-3C
C499	B-3C
C588	B-3B
C2803	B-7A
C2804	B-7A
C2805	A-6B
C2806	B-6A
C2807	A-8B
C2808	A-8A
C2809	A-8A
C2810	A-8B
C2811	A-8B
C2812	A-8A
C2813	B-6A
D	
D53	A-4B
D55	B-4A
D56	B-4A
D57	B-4A
D58	A-3C
D60	B-8A
D61	B-7A
D62	A-6A
D63	A-8B
D64	A-5A
D65	A-8B
D451	A-3B
D2801	A-7B
D2802	A-7A
D2803	A-7A
F	
F1	A-5A
F2	A-5A
IC	
IC51	A-4B
IC451	B-3D
IC453	A-3C
IC2801	B-6A
L	
L51	A-6B
L52	A-5A
L2801	B-6B
L2802	B-7A
L2803	B-7A
L2804	B-7A
L2805	B-6A
L2806	B-7A
PG	
PG1	B-3B
PG2	B-5A
PG3	B-8A
PG4	B-5A
PG451	A-3B
PG452	B-3B
PG2801	B-6B
Q	
Q51	A-4A
Q52	A-3B
Q53	B-3B
Q54	B-3A
Q55	A-3A
Q56	A-3B
Q57	A-4B
Q58	A-4A
Q59	A-4A
Q60	A-3A
Q62	A-4A
Q63	A-4A
Q64	A-4A
Q67	B-3C
Q68	A-3A
Q70	B-5A
Q71	A-5B
Q74	B-5B
Q75	A-3A
Q76	A-3A
Q77	A-3A
Q78	A-4A
Q454	B-3D
Q463	A-4B
Q464	A-4B
Q2801	B-6A
R	
R41	B-5A
R42	B-5B
R43	B-5B
R44	A-5B
R50	B-3C
R51	A-4A
R52	B-3A
R53	A-3B
R54	A-4A
R56	A-3B
R57	A-4A
R59	A-4A
R60	A-4A
R61	A-4B
R62	B-3B
R63	B-3B
R64	B-3B
R65	B-4B
R66	B-4A
R67	B-4A
R70	B-4A
R71	A-4A
R72	A-4A
R73	A-4A
R74	A-4B
R75	A-4A
R76	A-4A
R77	B-3C
R78	B-3C
R79	B-3C
R81	A-3C
R85	A-4A
R86	A-4A
R87	A-4A
R91	A-4A
R92	A-3B
R94	A-3A
R97	A-3A
R98	A-3A
R99	A-4A
R455	B-4C
R460	A-3C
R464	B-3C
R471	B-3C
R472	B-3C
R473	B-3C
R474	B-3C
R475	B-3C
R476	B-4C
R477	B-4C
R478	B-4C
R479	B-4C
R480	B-4D
R481	B-4D
R482	B-4D
R483	B-3D
R484	B-3D
R485	B-3D
R488	B-3D
R489	B-3D
R490	B-3D
R491	B-3C
R492	B-3C
R493	B-3C
R494	B-3C
R497	A-3C
R499	A-3B
R599	B-3D
R2801	B-6A
R2802	B-6A
R2803	B-6A
R2804	B-7A
R2805	B-7A
R2806	B-6A
R2809	B-7A
R2810	B-7A
R2811	B-6B
R2821	B-6B
R2829	A-5A
RT	
RT2801	A-7A
S	
S1	B-8B
T	
T2801	A-6A
TL	
TL67	B-4B
TL68	B-5B
TL2806	B-6B
TL2807	B-7B
TP	
TP2802	A-7B
TP2803	A-7B
ZD	
ZD451	B-3D
ZD452	A-3D

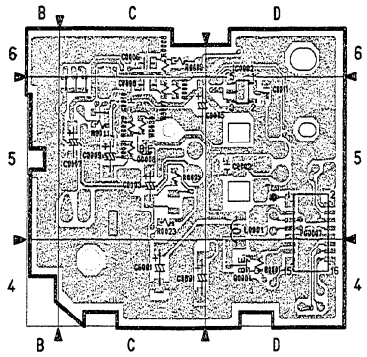
TIO
[TALLY/IR/OPTICAL]

Symbol No.	Parts Location
C	
C1	B-4C
C2	B-5D
C3	B-5C
C5	B-5C
C6	B-6C
C7	B-5C
C8	B-5C
C9	B-5C
C10	B-5C
C11	B-5D
C891	B-4C
C892	A-4C
IC	
IC1	A-5C
IC2	B-5D
L	
L1	B-5D
LD	
LD1	A-5D
LD2	A-5C
LD891	A-5C
PG	
PG7	B-5D
Q	
Q1	B-4D
Q2	A-4D
Q8	B-5C
Q891	A-4C
Q892	A-4C
R	
R1	B-4D
R2	A-4D
R3	A-4D
R4	A-4D
R5	B-5C
R6	B-6C
R7	B-5C
R8	B-6C
R9	B-5C
R11	B-5C
R20	A-5D
R21	A-5D
R22	A-5C
R23	B-5C
R29	B-5C
R30	B-5C
R31	B-5C
R891	A-4D
R893	A-5C
RT	
RT1	A-5D
RT2	A-5D
RT3	A-5C
RT4	A-4C
TL	
TL1	B-5D

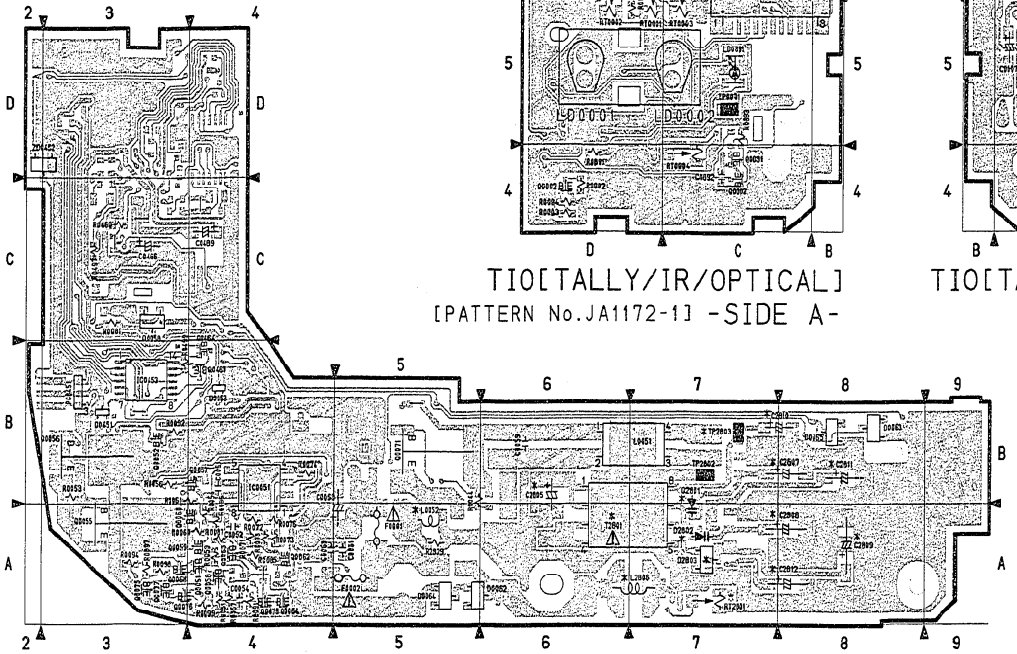
STA. TIO CIRCUIT BOARDS



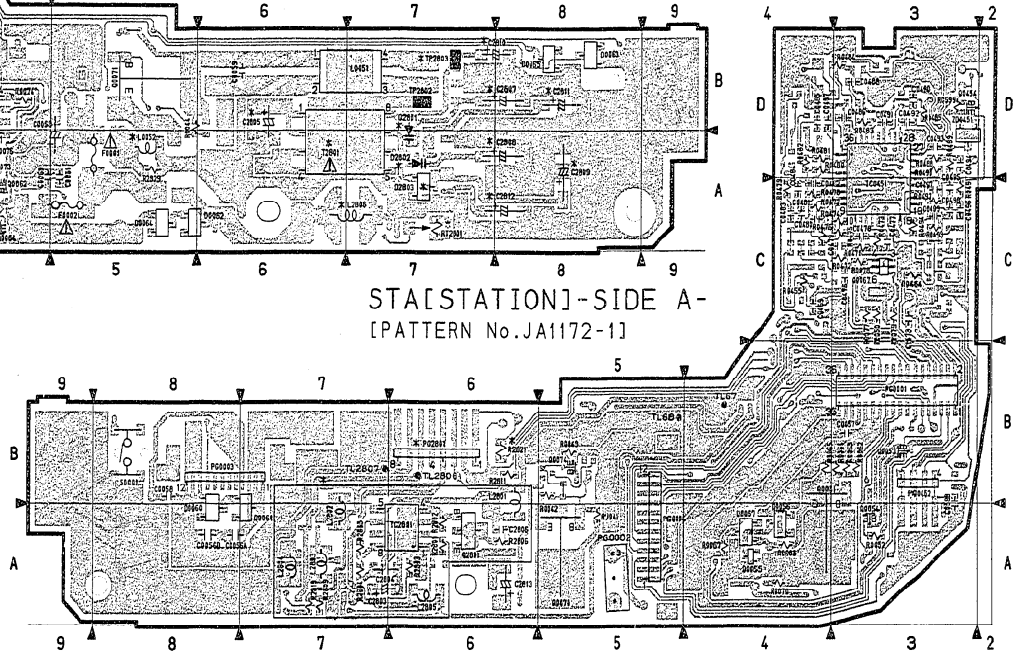
TIO[TALLY/IR/OPTICAL]
[PATTERN No.JA1172-1] -SIDE A-



TIO[TALLY/IR/OPTICAL]
-SIDE B-



STA[STATION]-SIDE A-
[PATTERN No.JA1172-1]



STA[STATION]-SIDE B-

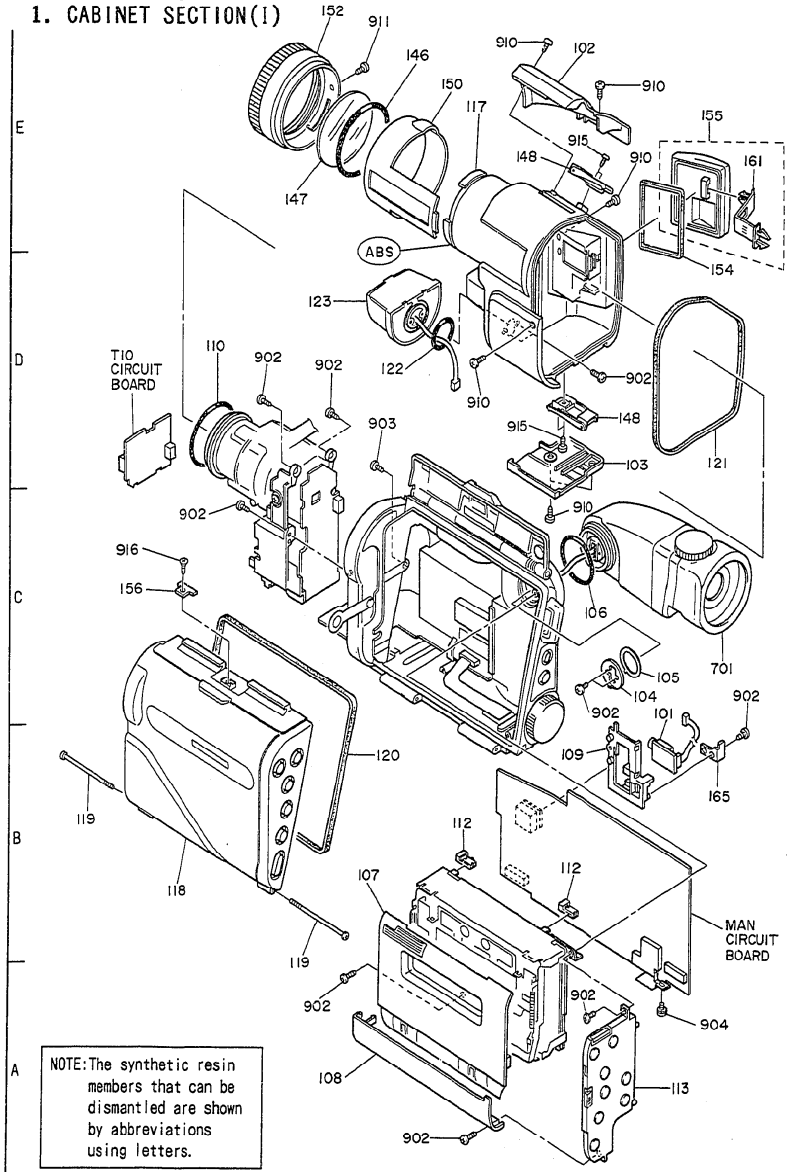
STA[STATION]
DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks (*) in the circuit board diagrams.

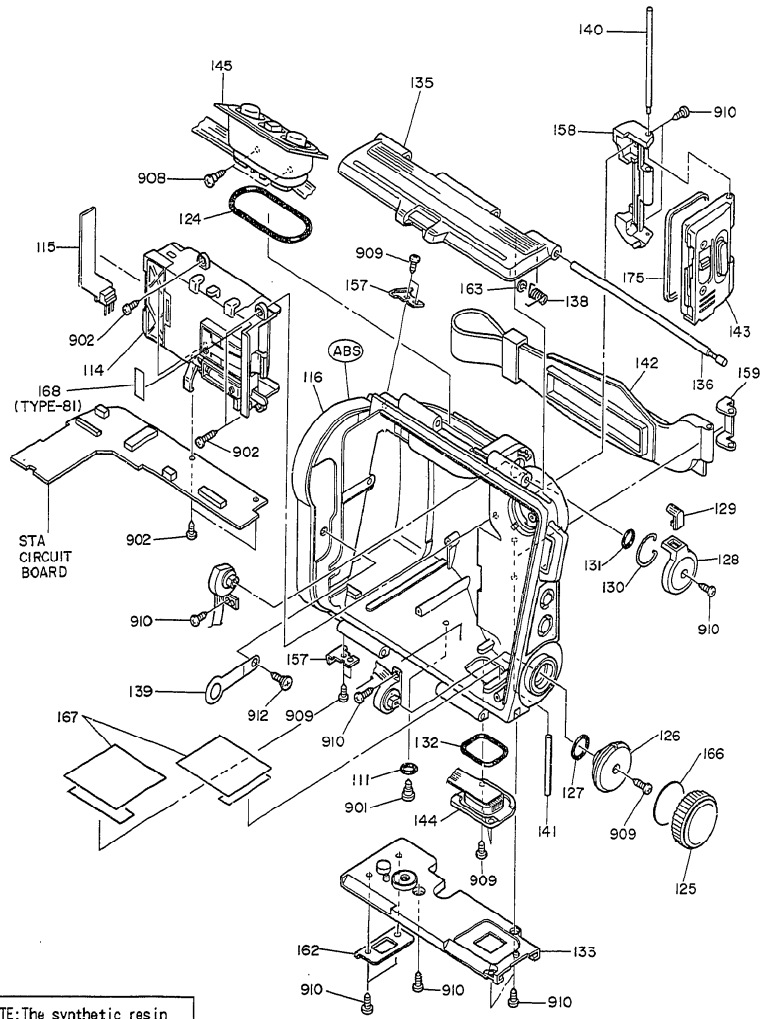
SYMBOL No.	TYPE 80	TYPE 81
C2803	×	○
C2804	×	○
C2805	×	○
C2806	×	○
C2807	×	○
C2808	×	○
C2809	×	○
C2810	×	○
C2811	×	○
C2812	×	○
IC2801	×	○
D2801	×	○
D2802	×	○
D2803	×	○
L0052	×	○
L2801	×	○
L2802	×	○
L2803	×	○
L2804	×	○
L2805	○	×
L2806	×	○
PG2801	4P	8P
Q2801	×	○
R2801	×	○
R2802	×	○
R2803	×	○
R2804	×	○
R2805	×	○
R2806	×	○
R2809	×	○
R2810	×	○
R2821	0 Ω	FLC40CORE
RT2801	×	○
T2801	×	○
TP2803	×	○

EXPLODED VIEWS

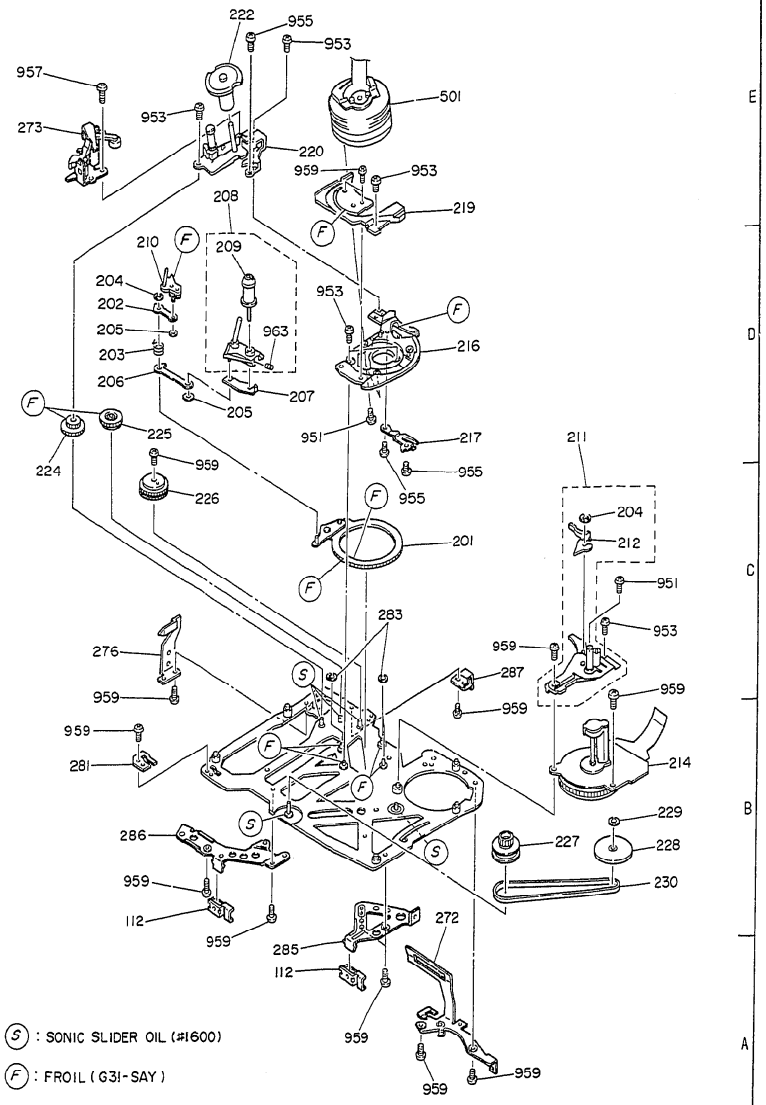
1. CABINET SECTION(I)


T10 CIRCUIT BOARD
MAN CIRCUIT BOARD
ABS
NOTE: The synthetic resin members that can be dismantled are shown by abbreviations using letters.

2. CABINET SECTION(I)


STA CIRCUIT BOARD
(TYPE-81)
ABS
NOTE: The synthetic resin members that can be dismantled are shown by abbreviations using letters.

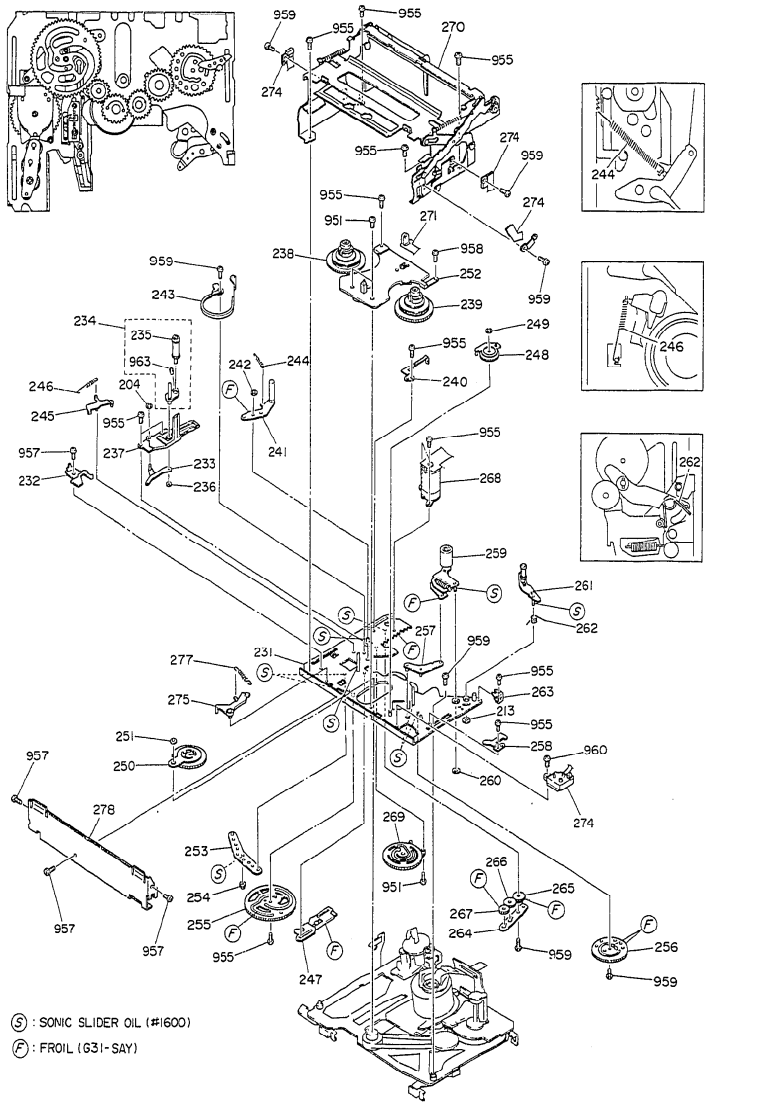
3. MAIN CHASSIS SECTION



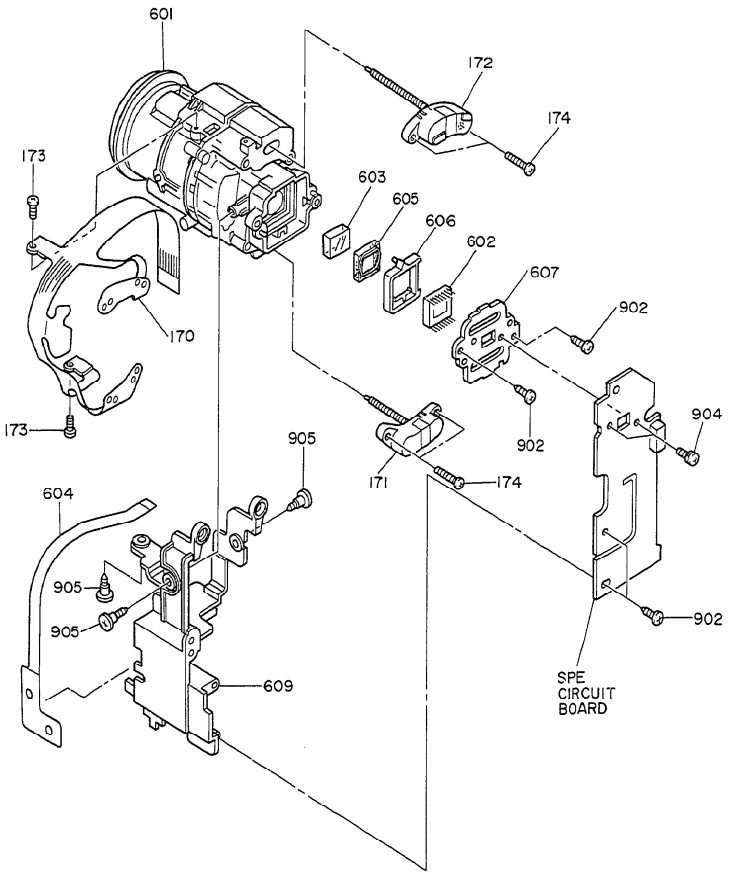
(S) : SONIC SLIDER OIL (#1600)

(F) : FROIL (G31-SAY)

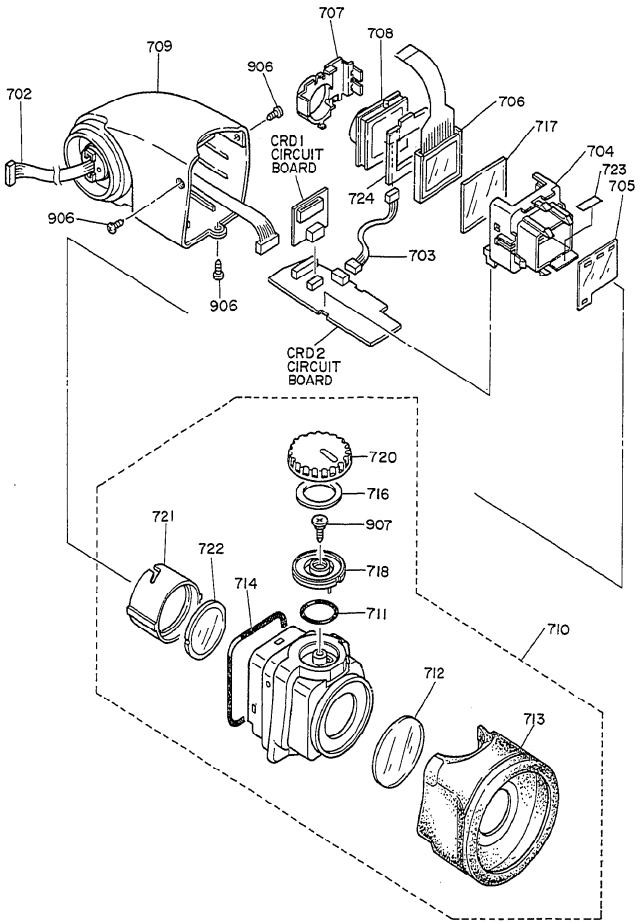
4. SUB CHASSIS SECTION



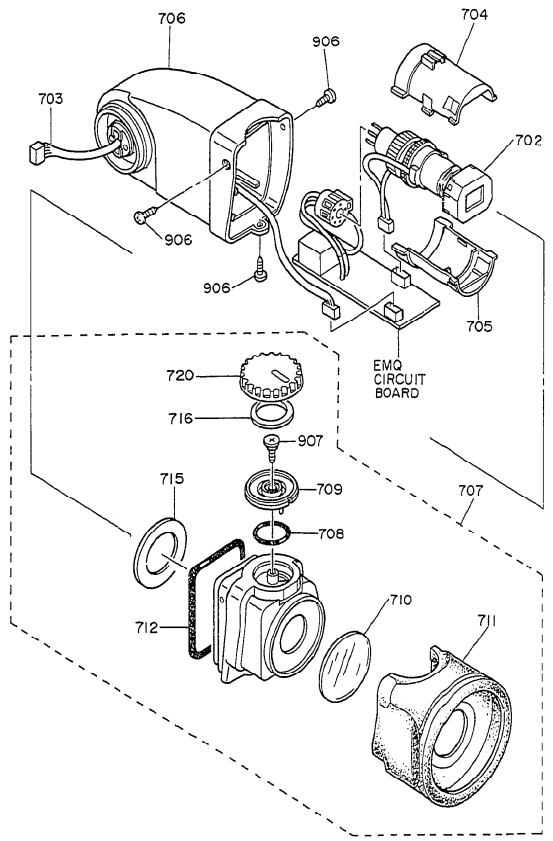
5. CAMERA BLOCK SECTION



6. ELECTRONIC VIEWFINDER (LCD EVF) SECTION



7. ELECTRONIC VIEWFINDER (CRT EVF) SECTION



REPLACEMENT PARTS LIST

1. MECHANICAL PARTS LIST

Note: This replacement parts list applies to the following model.
Applicable model: VM-H80E/H81E

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
101	ER10121	JACK
102	4799717	PIECE
103	4799722	COVER
104	4827361	BRACKET
105	4899872	SPRING
106	4592581	RING
107	4799681	PIECE
108	4592611	COVER, MECHA
109	6409061	HOLDER
110	4592532	RING
111	6593405	RING
112	6409161	PIECE
113	FH10141	FUNCTION SWITCH UNIT
114	NX10123	CASE, BATTERY
115	EU10141	TERMINAL PLATE
116	QD11472	CASE, MAIN
117	QD11462	CASE, FRONT
118	QD11445	LID, CASSETTE (TYPE 80)
118	QD11446	LID, CASSETTE (TYPE 81)
119	KA10112	SHAFT
120	4592603	RUBBER, MAIN
121	4592592	RUBBER
122	4592539	RING, MIC
123	GH10123	MICROPHONE
124	4592538	RING, T/W
125	4752611	KNOB, FOCUS
126	NJ10111	SHAFT
127	4592584	RING
128	4752642	KNOB, MODE
129	4752651	KNOB, LOCK
130	KL10111	SPRING
131	4592585	RING
132	4592534	RING
133	4799635	PIECE
135	QD10247	BUCKLE, MAIN
136	4511682	SHAFT
138	6554432	SPRING
139	NA10193	RINK, R
140	4511704	SHAFT
141	4511702	SHAFT
142	6336857	STRAP, HAND
143	QX10207	CAP, BATTERY
144	EZ10131	PLATE, CONNECTOR
145	FH10153	BUTTON T/W
146	4592531	RING
147	6966031	WINDOW,
148	4799551	PIECE
150	4799761	COVER, SIDE (LENS)
152	QX10521	FOOD, LENS
154	4592541	RUBBER
155	QX10217	PIECE
156	4827342	BRACKET
157	4799581	PLATE, SHIELD
158	6409122	HOLDER, BATTERY
159	4799621	BRACKET
161	6409043	HINGE
162	4799652	PIECE
163	7774948	E RING
165	NA10701	BRACKET
166	6568052	SPACER, FOCUS
167	MM10361	SPACER
168	MM10551	SPACER (TYPE 81)
170	KQ10191	FLEXIBLE
171	KQ10193	MOTOR, POWER ZOOM
172	KQ10192	MOTOR, AUTO FOCUS
173	KQ10194	SCREW (1.7X4.5)
174	KQ10195	SCREW (1.7X7.0)
175	4592571	RUBBER, BATTERY
201	4585298	RING
202	4585401	ARM, GUIDE
203	6553712	SPRING
204	7406661	E RING
205	7787573	WASHER
206	4585394	ARM
207	4585222	BRACKET
208	4585106	BASE, GUIDE
209	4585662	GUIDE ROLLER
210	4585616	BASE, GUIDE ROLLER
211	UC10131	PLATE, GUIDE
212	4585121	PLATE, GUIDE
213	7787733	WASHER
214	5579521	MOTOR, CAPSTAN
216	4586733	BASE, CYLINDER
217	4585487	PLATE
219	4585282	PLATE, GUIDE
220	4585259	CATCHER
222	KF10461	PULLEY
224	4584321	GEAR
225	6405411	GEAR
226	4584352	GEAR
227	6405401	GEAR
228	6405441	GEAR
229	4391203	WASHER
230	6398262	BELT
231	7139446	CHASSIS
232	4584403	PIN
233	4585164	RING
234	4584383	BASE
235	4585702	GUIDE ROLLER
236	7787573	WASHER
237	4584732	PLATE GUIDE
238	6416777	REEL, TABLE
239	6416776	REEL, TABLE
240	4585001	HOOK
241	KX10401	ARM
242	4391201	WASHER
243	4584331	BAND TENTION
244	6553743	SPRING
245	4584411	BRAKE
246	6558461	SPRING
247	4585183	SLIDER
248	4584561	GEAR
249	4391201	WASHER
250	6401522	IDLER
251	4391201	WASHER
252	4584693	BRACKET
253	4584311	ARM, CAM
254	4510433	ROLLER, CAM
255	4584153	GEAR
256	4585143	GEAR
257	4584141	ARM
258	4584523	BRACKET
259	4584425	ARM, PRESSURE ROLLER
260	4391204	WASHER
261	UC10123	ARM
262	6553732	SPRING
263	4584532	HOLDER

SYMBOL-NO	P-NO	DESCRIPTION
264	4584512	BRACKET
265	4584292	GEAR
266	4584272	GEAR
267	6405372	GEAR
268	5579532	MOTOR, LOADING
269	5613472	SWITCH
270	4586417	HOLDER ASSY. CASSETTE
271	4584992	HOLDER, LED
272	KX10341	BRACKET
273	KX10272	CLEANING PAD
274	1651703	PWB ASSY TROUBLE SENSOR
275	KX10221	BRAKE
276	4585471	BRACKET
277	KL10192	SPRING
278	KX10381	FRONT BRACKET
281	4584283	PLATE
283	4391202	WASHER
285	KX10351	BRACKET
286	KX10361	BRACKET
287	KX10371	BRACKET
501	5436819	CYLINDER ASSY (CY-35L3)
601	KQ10161	LENS ZOOM ASSY
602	DJ10161	CCD IMAGE DEVICE ICX060AK-9
603	DT10111	FILTER
604	FH10122	CONTROL SWITCH UNIT
605	4592621	RUBBER
606	6409181	HOLDER, SENSOR
607	4827371	PLATE, SENSOR
609	QX10182	FRAME, LENS
701	UE10671	EVF ASSY (TYPE 80)
701	UE10683	EVF ASSY (TYPE 81)
△702	5319061	CRT (TYPE 80)
702	5844979	CONNECTOR (TYPE 81)
703	5844978	CONNECTOR (TYPE 80)
703	5846771	CONNECTOR (TYPE 81)
704	6409241	HOLDER, LCD (TYPE 81)
704	6409301	CASE, CRT (U) (TYPE 80)
705	6409311	DOOR, FRONT (TYPE 80)
705	MN10432	COVER, CLEAR (TYPE 81)
706	DB10142	CRYSTAL, LIQUID (TYPE 81)
706	QD11571	CASE, EVF (TYPE 80)
707	4717843	CASE, LENS (TYPE 80)
707	6409231	HOLDER, BACK LIGHT (TYPE 81)
708	6593401	RING (TYPE 80)
708	DT10122	LIGHT ASSY (TYPE 81)
709	6409211	PIECE (TYPE 80)
709	QD11582	CASE, EVF (TYPE 81)
710	4717793	CASE, LENS (TYPE 81)
710	4799741	PLATE (TYPE 80)
711	4799751	CAP, EYE (TYPE 80)
711	6593401	RING (TYPE 81)
712	4799741	PLATE (TYPE 81)
712	NX10353	RUBBER, EVF (TYPE 80)
713	4799751	CAP, EYE (TYPE 81)
714	NX10354	RUBBER (TYPE 81)
715	MN10373	WASHER (TYPE 80)
716	MQ10201	SPACER
717	NX10441	PANEL, CLEAR (TYPE 81)
718	6409212	PIECE (TYPE 81)
720	4752661	KNOB
721	6409221	HOLDER, LENS (TYPE 81)
722	6951491	LENS, EVF (TYPE 81)
723	4350794	SPACER (TYPE 81)
724	MM10611	SPACER (TYPE 81)
901	7773831	SCREW
902	7775945	SCREW (2X5)
903	8650104	SCREW
904	8650103	SCREW (2X3)
905	MJ10221	SCREW
906	MJ10152	SCREW
907	7775322	SCREW
908	MJ10181	SCREW (2X4)
909	7773852	SCREW (2X5)
910	MJ10171	SCREW (2X5)
911	MJ10151	SCREW (1.7X4)
912	MJ10141	SCREW (M2.6)
915	MJ10231	SCREW (1.7X5)
916	MJ10161	SCREW (2X5)
951	8714026	SCREW (1.4X3.5)
953	8712024	PAN HEAD SCREW-1.4MMDX3MM
955	7775921	SCREW (1.4X2)
957	7775912	SCREW (1.4X1.8)
958	7773611	SCREW (1.7X3)
959	7775911	SCREW (1.4X1.6)
960	8712024	PAN HEAD SCREW-1.4MMDX3MM
963	7781174	SCREW
		ACCESSARIES
803	NX10361	BRUSH
804	4135453	CASE, REMOCON
805	EV10121	CORD, POWER
△807	TS11621	AC ADAPTOR (VM-ACL1E)
808	5516352	REMOTE HAND SET (VM-RME55A)
809	4132852	PLUG
810	5699421	SOCKT
811	QX10191	CAP, FOOD
812	QX10351	CAP, MIC
814	TS11791	SHOULDER STRAP
815	QX10241	PIECE
816	5856291	AUDIO/VIDEO OUTPUT CABLE
819	TS11831	TRIPOD, MINI (TYPE 81)
820	HL10302	REMOTE HAND SET (VM-RM70EDE)
822	5856023	CORD (TYPE 81)
823	UQ12223	INFRARED UNIT (VM-IR80E) (TYPE 81)
824	TS11861	INFRARED ADAPTOR (TYPE 81)

2. ELECTRICAL PARTS LIST

Note: This replacement parts list applies to the following model.
Applicable model: VM-H80E/H81E

SYMBOL-NO	P-NO	DESCRIPTION
		VCR & CAMERA SECTION
C0001	0806157	ELECTROLYTIC 22UF 6.3V
C0002	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0003	0806153	ELECTROLYTIC 10UF 16V
C0005	0806157	ELECTROLYTIC 22UF 6.3V
C0006	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0007	0806153	ELECTROLYTIC 10UF 16V
C0008	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0009	0806146	ELECTROLYTIC 2.2UF 50V
C0010	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0011	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0051	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C0052	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0053	0806148	ELECTROLYTIC 3.3UF 50V
C0054	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0056A	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C0056B	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C0057	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0058	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0059	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0060	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0061	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0101	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0103	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0104	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0106	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0107	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0108	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0109	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0110	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0111	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0112	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0113	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0114	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0115	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0116	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0117	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0118	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0119	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0120	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0123	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0124	0206594	ELECTROLYTIC 100UF 6.3V
C0125	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0126	0893121	CERAMIC CHIP 39PF+-5% 50V
C0127	0893119	CERAMIC CHIP 33PF+-5% 50V
C0128	0893122	CERAMIC CHIP 47PF+-5% 50V
C0129	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0130	0893121	CERAMIC CHIP 39PF+-5% 50V
C0131	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0132	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0133	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0134	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0135	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0136	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0137	0893132	CERAMIC CHIP 270PF+-5% 50V
C0138	0202158	CERAMIC CHIP 75PF+-5% 50V
C0140	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0141	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0142	0893214	CERAMIC CHIP 2700PF+-10% 50V
C0143	0893121	CERAMIC CHIP 39PF+-5% 50V
C0144	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0145	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0146	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0147	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0149	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C0150	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0151	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0152	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0153	0202158	CERAMIC CHIP 75PF+-5% 50V
C0154	0806168	ELECTROLYTIC 47UF 6.3V
C0158	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C0181	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0182	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0183	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0184	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0185	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0201	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0203	0893102	CERAMIC CHIP 1.0PF+-0.25% 50V
C0204	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0205	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0206	0806024	ELECTROLYTIC 3.3UF 6.3V
C0207	0806168	ELECTROLYTIC 47UF 6.3V
C0208	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0209	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0211	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0212	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0213	0893124	CHIP CERAMIC 68PF+-5% 50V
C0214	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0215	0806004	ELECTROLYTIC 0.33UF 35V
C0216	0893119	CERAMIC CHIP 33PF+-5% 50V
C0217	0806168	ELECTROLYTIC 47UF 6.3V
C0218	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0220	0893123	CERAMIC CHIP 56PF+-5% 50V
C0223	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0225	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0226	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0227	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0229	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0230	0893115	CERAMIC CHIP 15PF+-5% 50V
C0231	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0232	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0233	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0234	0806027	ELECTROLYTIC 4.7UF 4V
C0235	0806133	ELECTROLYTIC 10UF 6V
C0236	0806027	ELECTROLYTIC 4.7UF 4V
C0237	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0238	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0239	0806027	ELECTROLYTIC 4.7UF 4V
C0240	0806027	ELECTROLYTIC 4.7UF 4V
C0242	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0243	0806133	ELECTROLYTIC 10UF 6V
C0244	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0246	0893126	CERAMIC CHIP 100PF+-5% 50V
C0247	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0248	0806168	ELECTROLYTIC 47UF 6.3V
C0249	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0250	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0251	0893117	CERAMIC CHIP 22PF+-5% 50V
C0252	0893115	CERAMIC CHIP 15PF+-5% 50V
C0253	0806011	ELECTROLYTIC 1.0UF 16V
C0254	0893127	CERAMIC CHIP 120PF+-5% 50V
C0255	0893124	CHIP CERAMIC 68PF+-5% 50V
C0256	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0257	0893116	CERAMIC CHIP 18PF+-5% 50V
C0258	0893134	CERAMIC CHIP 390PF+-5% 50V
C0259	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0260	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0261	0893108	CERAMIC CHIP 6.0PF+-0.5% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C0262	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0263	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0264	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0265	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0266	0806117	ELECTROLYTIC 3.3UF 16V
C0267	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0268	0806133	ELECTROLYTIC 10UF 6V
C0269	0893106	CERAMIC CHIP 4.0PF+-0.25% 50V
C0270	0893127	CERAMIC CHIP 120PF+-5% 50V
C0271	0893116	CERAMIC CHIP 18PF+-5% 50V
C0272	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0273	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0275	0806117	ELECTROLYTIC 3.3UF 16V
C0276	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0277	0806117	ELECTROLYTIC 3.3UF 16V
C0278	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0279	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0280	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0281	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0282	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0284	0893109	CERAMIC CHIP 7.0PF 50V
C0285	0893126	CERAMIC CHIP 100PF+-5% 50V
C0286	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0287	0893131	CERAMIC CHIP 220PF+-5% 50V
C0288	0806133	ELECTROLYTIC 10UF 6V
C0289	0806178	ELECTROLYTIC 220UF 4V
C0290	0806178	ELECTROLYTIC 220UF 4V
C0291	0806133	ELECTROLYTIC 10UF 6V
C0292	0806019	ELECTROLYTIC 2.2UF 10V
C0293	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0294	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C0295	0893122	CERAMIC CHIP 47PF+-5% 50V
C0296	0893127	CERAMIC CHIP 120PF+-5% 50V
C0297	0893114	CERAMIC CHIP 12PF+-5% 50V
C0299	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0303	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0304	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0305	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0306	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0307	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0309	0806168	ELECTROLYTIC 47UF 6.3V
C0310	0806019	ELECTROLYTIC 2.2UF 10V
C0311	0806133	ELECTROLYTIC 10UF 6V
C0312	0806133	ELECTROLYTIC 10UF 6V
C0313	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0351	0893126	CERAMIC CHIP 100PF+-5% 50V
C0352	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0353	0806027	ELECTROLYTIC 4.7UF 4V
C0354	0893133	CERAMIC CHIP 330PF+-5% 50V
C0355	0893134	CERAMIC CHIP 390PF+-5% 50V
C0356	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0357	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0358	0806117	ELECTROLYTIC 3.3UF 16V
C0359	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0360	0893116	CERAMIC CHIP 18PF+-5% 50V
C0362	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0365	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0366	0806133	ELECTROLYTIC 10UF 6V
C0401	0806011	ELECTROLYTIC 1.0UF 16V
C0402	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0403	0893119	CERAMIC CHIP 33PF+-5% 50V
C0404	0806011	ELECTROLYTIC 1.0UF 16V
C0405	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0406	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0407	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0408	0893213	CERAMIC CHIP 2200PF+-10% 50V
C0409	0893211	CERAMIC CHIP 1500PF+-10% 50V
C0411	0806127	ELECTROLYTIC 22UF 4V
C0412	0806019	ELECTROLYTIC 2.2UF 10V
C0413	0806027	ELECTROLYTIC 4.7UF 4V
C0414	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0415	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0416	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0417	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0418	0893135	CERAMIC CHIP 470PF+-5% 50V
C0419	0893215	CERAMIC CHIP 3300PF+-10% 50V
C0420	0806019	ELECTROLYTIC 2.2UF 10V
C0421	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0422	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0423	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0424	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0425	0806027	ELECTROLYTIC 4.7UF 4V
C0426	0806133	ELECTROLYTIC 10UF 6V
C0427	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0428	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0429	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0430	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0431	0806125	ELECTROLYTIC 10UF 10V
C0432	0893215	CERAMIC CHIP 3300PF+-10% 50V
C0433	0893135	CERAMIC CHIP 470PF+-5% 50V
C0434	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0435	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0436	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0437	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0438	0806027	ELECTROLYTIC 4.7UF 4V
C0439	0806019	ELECTROLYTIC 2.2UF 10V
C0440	0806127	ELECTROLYTIC 22UF 4V
C0442	0893211	CERAMIC CHIP 1500PF+-10% 50V
C0443	0893213	CERAMIC CHIP 2200PF+-10% 50V
C0444	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0445	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0446	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0447	0806011	ELECTROLYTIC 1.0UF 16V
C0448	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0449	0806168	ELECTROLYTIC 47UF 6.3V
C0451	0806011	ELECTROLYTIC 1.0UF 16V
C0452	0893119	CERAMIC CHIP 33PF+-5% 50V
C0453	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0454	0806005	ELECTROLYTIC 0.47UF 25V
C0455	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0456	0893173	CERAMIC CHIP 680PF+-5% 50V
C0457	0893131	CERAMIC CHIP 220PF+-5% 50V
C0458	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0459	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0460	0806005	ELECTROLYTIC 0.47UF 25V
C0461	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0462	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0463	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0466	0806115	ELECTROLYTIC 2.2UF 16V
C0469	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C0473	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C0476	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C0477	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C0478	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C0479	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0480	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0481	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0482	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0483	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0484	0893213	CERAMIC CHIP 2200PF+-10% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C0485	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
C0486	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0487	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
C0488	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
C0489	0806133	ELECTROLYTIC 10UF 6V
C0490	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
CC491	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0492	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0493	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
C0494	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
C0495	0893213	CERAMIC CHIP 2200PF+-10% 50V
C0496	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0497	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0498	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0499	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0502	0893119	CERAMIC CHIP 33PF+-5% 50V
C0503	0893217	CERAMIC CHIP 4700PF+-10% 50V
C0504	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0505	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0506	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0507	0893125	CERAMIC CHIP 82PF+-5% 50V
C0508	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0509	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0510	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0511	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0512	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0513	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0515	0893133	CERAMIC CHIP 330PF+-5% 50V
C0516	0893119	CERAMIC CHIP 33PF+-5% 50V
C0517	0893134	CERAMIC CHIP 390PF+-5% 50V
C0518	0893119	CERAMIC CHIP 33PF+-5% 50V
C0519	0893133	CERAMIC CHIP 330PF+-5% 50V
C0520	0893031	CERAMIC CHIP 1000PF+-10% 50V
C0521	0206671	ELECTROLYTIC 10UF 10V
C0522	0206671	ELECTROLYTIC 10UF 10V
C0524	0806168	ELECTROLYTIC 47UF 6.3V
C0525	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0526	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0528	0206671	ELECTROLYTIC 10UF 10V
C0529	0206671	ELECTROLYTIC 10UF 10V
C0531	0206671	ELECTROLYTIC 10UF 10V
C0534	0206671	ELECTROLYTIC 10UF 10V
C0535	0206671	ELECTROLYTIC 10UF 10V
C0536	0806149	ELECTROLYTIC 4.7UF 25V
C0537	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0538	0806149	ELECTROLYTIC 4.7UF 25V
C0541	0206597	ELECTROLYTIC 10UF 35V
C0542	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0543	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0544	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0545	0806019	ELECTROLYTIC 2.2UF 10V
C0546	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0547	0893276	CERAMIC CHIP 100PF+-5% 50V
C0588	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0603	0206646	ELECTROLYTIC 4.7UF 16V
C0604	0893211	CERAMIC CHIP 1500PF+-10% 50V
C0606	0806149	ELECTROLYTIC 4.7UF 25V
C0607	0806019	ELECTROLYTIC 2.2UF 10V
C0608	0893192	CERAMIC CHIP 0.015UF+-10% 16V
C0609	0206644	ELECTROLYTIC 1.0UF 50V
C0610	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0611	0206642	ELECTROLYTIC 22UF 6V
C0612	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0613	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0614	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0615	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0617	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0618	0883005	MYLAR CHIP 0.015UF+-10% 25V
C0622	0806149	ELECTROLYTIC 4.7UF 25V
C0623	0893114	CERAMIC CHIP 12PF+-5% 50V
C0624	0893114	CERAMIC CHIP 12PF+-5% 50V
C0625	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0627	0893122	CERAMIC CHIP 47PF+-5% 50V
C0628	0893122	CERAMIC CHIP 47PF+-5% 50V
C0629	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0630	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0631	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0636	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0638	0806133	ELECTROLYTIC 10UF 6.3V
C0639	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0640	0806133	ELECTROLYTIC 10UF 6.3V
C0641	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0642	0806004	ELECTROLYTIC 0.33UF 35V
C0643	0806011	ELECTROLYTIC 1.0UF 16V
C0645	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0646	0806003	ELECTROLYTIC 0.22UF 35V
C0647	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0648	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0649	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0650	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0653	0893119	CERAMIC CHIP 33PF+-5% 50V
C0654	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0655	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0656	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0657	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0658	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0659	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0661	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0662	0806019	ELECTROLYTIC 2.2UF 10V
C0664	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0668	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0669	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0670	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0673	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0682	0893133	CERAMIC CHIP 330PF+-5% 50V
C0694	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0695	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0696	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0697	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0891	0206601	CHIP CAPACITOR 22UF+-20% 6.3V
C0892	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0901	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0902	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0903	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0904	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0905	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0906	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0907	0806136	ELECTROLYTIC 22UF 16V
C0908	0893215	CERAMIC CHIP 3300PF+-10% 50V
C0909	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0910	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0911	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0912	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0913	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0914	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0915	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0916	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0917	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0919	0893116	CERAMIC CHIP 18PF+-5% 50V
C0921	0893116	CERAMIC CHIP 18PF+-5% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C0922	0806125	ELECTROLYTIC 10UF 10V
C0925	0893161	CERAMIC CHIP 82PF+-5% 50V(TYPE 80)
C0925	0893173	CERAMIC CHIP 680PF+-5% 50V(TYPE 81)
C0929	0893119	CERAMIC CHIP 33PF+-5% 50V
C0930	0893126	CERAMIC CHIP 100PF+-5% 50V
C0931	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0932	0806168	ELECTROLYTIC 47UF 6.3V
C0934	0893217	CERAMIC CHIP 4700PF+-10% 50V
C0935	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0936	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0937	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0938	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0940	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0942	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0946	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0950	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0954	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0955	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0956	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C0960	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C1001	0806095	ELECTROLYTIC 47UF 4V
C1002	0806024	ELECTROLYTIC 3.3UF 6.3V
C1003	0806169	ELECTROLYTIC 47UF 16V
C1004	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1005	0206648	ELECTROLYTIC 33UF 10V
C1006	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1008	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1101	0893117	CERAMIC CHIP 22PF+-5% 50V
C1102	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1103	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1104	0806019	ELECTROLYTIC 2.2UF 10V
C1105	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1106	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1107	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1108	0806173	ELECTROLYTIC 100UF 4V
C1109	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1110	0806169	ELECTROLYTIC 47UF 16V
C1111	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1112	0806174	ELECTROLYTIC 100UF 6.3V
C1113	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1114	0806168	ELECTROLYTIC 47UF 6.3V
C1115	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1116	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1117	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1118	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1119	0893208	CERAMIC CHIP 1000PF+-10% 50V
C1120	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1121	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1122	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1123	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1124	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1125	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1126	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1131	0893124	CHIP CERAMIC 68PF+-5% 50V
C1132	0893125	CERAMIC CHIP 82PF+-5% 50V
C1133	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1134	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1137	0893208	CERAMIC CHIP 1000PF+-10% 50V
C1138	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1140	0893121	CERAMIC CHIP 39PF+-5% 50V
C1141	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1142	0806133	ELECTROLYTIC 10UF 6V
C1143	0806133	ELECTROLYTIC 10UF 6V
C1144	0806133	ELECTROLYTIC 10UF 6V
C1145	0893114	CERAMIC CHIP 12PF+-5% 50V
C1146	0806173	ELECTROLYTIC 100UF 4V
C1147	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1148	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1149	0806174	ELECTROLYTIC 100UF 6.3V
C1150	0893208	CERAMIC CHIP 1000PF+-10% 50V
C1152	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1153	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1154	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1155	0806149	ELECTROLYTIC 4.7UF 25V
C1156	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1157	0893119	CERAMIC CHIP 33PF+-5% 50V
C1158	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1159	0893133	CERAMIC CHIP 330PF+-5% 50V
C1160	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1161	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1162	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1163	0806158	ELECTROLYTIC 22UF 16V
C1164	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1165	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1167	0893125	CERAMIC CHIP 82PF+-5% 50V
C1168	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1169	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1170	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1171	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1173	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1174	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1175	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1177	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1178	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1179	0806168	ELECTROLYTIC 47UF 6.3V
C1180	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1181	0893117	CERAMIC CHIP 22PF+-5% 50V
C1185	0893121	CERAMIC CHIP 39PF+-5% 50V
C1186	0202319	CERAMIC CHIP 22PF+-2% 50V
C1187	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1190	0806153	ELECTROLYTIC 10UF 16V
C1191	0893208	CERAMIC CHIP 1000PF+-10% 50V
C1192	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1193	0893208	CERAMIC CHIP 1000PF+-10% 50V
C1196	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1197	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1198	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C1199	0893208	CERAMIC CHIP 1000PF+-10% 50V
C1201	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1202	0893132	CERAMIC CHIP 270PF+-5% 50V
C1203	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C1204	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1205	0893007	CERAMIC CHIP 0.082UF+-10% 16V
C1207	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1208	0893133	CERAMIC CHIP 330PF+-5% 50V
C1210	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1211	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C1212	0893133	CERAMIC CHIP 330PF+-5% 50V
C1216	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1217	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1219	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1220	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1221	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1223	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1304	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1308	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1309	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1311	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1314	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1315	0806168	ELECTROLYTIC 47UF 6.3V

SYMBOL-NO	P-NO	DESCRIPTION
C1316	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1317	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1318	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1319	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1320	0893215	CERAMIC CHIP 3300PF+-10% 50V
C1321	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1322	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1323	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1324	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1325	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1326	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1327	0893215	CERAMIC CHIP 3300PF+-10% 50V
C1328	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1329	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1330	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1331	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1332	0806169	ELECTROLYTIC 47UF 16V
C1333	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1334	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1335	0893126	CERAMIC CHIP 100PF+-5% 50V
C1336	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1337	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1338	0893175	CERAMIC CHIP 100PF+-5% 50V
C1340	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1341	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1401	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1402	0806157	ELECTROLYTIC 22UF 6.3V
C1403	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1404	0806157	ELECTROLYTIC 22UF 6.3V
C1405	0806167	ELECTROLYTIC 47UF 4V
C1406	0806157	ELECTROLYTIC 22UF 6.3V
C1407	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1408	0893209	CERAMIC CHIP 1200PF 50V
C1409	0893209	CERAMIC CHIP 1200PF 50V
C1410	0206649	ELECTROLYTIC 33UF 4V
C1411	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1412	0206649	ELECTROLYTIC 33UF 4V
C1413	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1420	0806167	ELECTROLYTIC 47UF 4V
C1421	0806157	ELECTROLYTIC 22UF 6.3V
C1423	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1424	0893209	CERAMIC CHIP 1200PF 50V
C1425	0893209	CERAMIC CHIP 1200PF 50V
C1426	0206649	ELECTROLYTIC 33UF 4V
C1427	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1428	0206649	ELECTROLYTIC 33UF 4V
C1429	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1430	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C2803	0806027	ELECTROLYTIC 4.7UF 4V(TYPE 81)
C2804	0202151	CERAMIC CHIP 2200PF+-5% 50V(TYPE 81)
C2805	0206671	ELECTROLYTIC 10UF 10V(TYPE 81)
C2806	0893193	CERAMIC CHIP 0.01UF+-10% 25V(TYPE 81)
C2807	0206597	ELECTROLYTIC 10UF 35V(TYPE 81)
C2808	0206597	ELECTROLYTIC 10UF 35V(TYPE 81)
C2809	0206593	ELECTROLYTIC 47UF 10V(TYPE 81)
C2810	0806149	ELECTROLYTIC 4.7UF 25V(TYPE 81)
C2811	0806158	ELECTROLYTIC 22UF 16V(TYPE 81)
C2812	0806168	ELECTROLYTIC 47UF 6.3V(TYPE 81)
C2813	0806157	ELECTROLYTIC 22UF 6.3V
R0001	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0002	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0003	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0004	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0005	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0006	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0007	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0008	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0009	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0011	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0020	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0021	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0022	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0023	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0029	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0030	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0031	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0041	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0042	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0043	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0044	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R0051	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0052	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0053	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0054	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0056	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0057	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0059	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0060	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0061	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0062	0790078	CHIP RESISTOR 1 OHM+-5% 1/16W
R0063	0790078	CHIP RESISTOR 1 OHM+-5% 1/16W
R0064	0790078	CHIP RESISTOR 1 OHM+-5% 1/16W
R0065	0790004	CHIP RESISTOR 3.3 OHM+-5% 1/16W
R0066	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0067	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0070	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0071	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0072	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0073	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0074	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R0075	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0076	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0077	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R0078	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R0079	0790027	CHIP RESISTOR 180OHM+-5% 1/16W
R0081	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0085	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0086	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0087	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0091	0104084	CHIP RESISTOR 2.2MOHM+-5% 1/16W
R0092	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0094	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R0097	0790072	CHIP RESISTOR 390KOHM+-5% 1/16W
R0098	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0099	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0101	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0102	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0103	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0104	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0105	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0106	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0107	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0108	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0109	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0110	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0111	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0112	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0113	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R0114	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0116	0103817	CHIP RESISTOR 6.8 OHM+-10% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R0117	0790205	CHIP RESISTOR 680 OHM+-5% 1/16W
R0118	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R0119	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0120	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0121	0790187	CHIP RESISTOR 33 OHM+-5% 1/16W
R0122	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R0123	0790201	CHIP RESISTOR 330 OHM+-5% 1/16W
R0124	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R0125	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0127	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R0129	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0130	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0131	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R0133	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R0134	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R0135	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0136	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0137	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0138	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0139	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0140	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0141	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0146	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R0154	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R0155	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0156	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0163	0790206	CHIP RESISTOR 820 OHM+-5% 1/16W
R0165	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0166	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0168	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0169	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0170	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R0174	0790001	JUMPER CHIP RESISTOR
R0175	0790001	JUMPER CHIP RESISTOR
R0176	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0177	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0178	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R0182	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16W
R0184	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0185	5172541	FILTER
R0186	5172541	FILTER
R0187	5172541	FILTER
R0188	5172541	FILTER
R0190	5172541	FILTER
R0191	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16W
R0192	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16W
R0199	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0201	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0202	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0203	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0205	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0206	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0208	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0209	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0213	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0214	0790242	CHIP RESISTOR 390KOHM+-5% 1/16W
R0215	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W
R0216	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0217	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0218	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0219	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0227	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0228	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0230	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0231	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0233	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0234	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0239	0790199	CHIP RESISTOR 270 OHM+-5% 1/16W
R0240	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W
R0241	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0243	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0244	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0245	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0246	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0247	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0248	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0249	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0251	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0252	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0255	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0256	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0257	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0258	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0259	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0260	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0261	0790206	CHIP RESISTOR 820 OHM+-5% 1/16W
R0263	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0264	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0265	0790205	CHIP RESISTOR 680 OHM+-5% 1/16W
R0269	0790195	CHIP RESISTOR 120 OHM+-5% 1/16W
R0270	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R0271	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0272	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0273	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0274	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R0275	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R0276	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0278	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0279	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R0280	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R0282	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0283	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0286	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0287	0790238	CHIP RESISTOR 220KOHM+-5% 1/16W
R0288	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0289	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16W
R0291	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0292	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0293	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0294	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0295	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0296	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0298	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0299	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0306	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0307	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0308	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0311	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0313	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0315	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0316	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0317	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0318	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0319	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R0320	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0321	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0322	0790206	CHIP RESISTOR 820 OHM+-5% 1/16W
R0323	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0325	0790206	CHIP RESISTOR 820 OHM+-5% 1/16W
R0328	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0329	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0330	0790206	CHIP RESISTOR 820 OHM+-5% 1/16W
R0331	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0334	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0335	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0336	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0337	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0338	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0339	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0340	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0342	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0343	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0344	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0351	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0352	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0353	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0354	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0356	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0357	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0359	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0360	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0361	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0363	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0364	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0367	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0368	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0369	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0370	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0373	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0374	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0375	0790206	CHIP RESISTOR 820 OHM+-5% 1/16W
R0376	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0377	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0378	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0380	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0382	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0383	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0384	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0385	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0387	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0388	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0389	0790234	CHIP RESISTOR 100KOHM+ 5% 1/16W
R0394	0790001	JUMPER CHIP RESISTOR
R0401	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0402	0790236	CHIP RESISTOR 150KOHM+-5% 1/16W
R0403	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0404	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0405	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0406	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0407	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0408	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0409	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R0410	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0411	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R0412	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0413	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0414	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0415	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0416	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0420	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0421	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0422	0790236	CHIP RESISTOR 150KOHM+-5% 1/16W
R0423	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0424	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0425	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0426	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0427	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0428	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0429	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0430	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0431	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0432	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0433	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0434	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0437	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0438	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0455	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0460	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R0464	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0471	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R0472	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R0473	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R0474	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0475	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0476	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0477	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0478	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0479	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0480	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0481	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0482	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0483	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0484	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0485	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0488	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0489	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0490	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0491	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0492	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0493	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0494	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0499	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0501	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0502	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0503	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0505	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0506	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0509	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0510	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R0512	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0513	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0514	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R0516	0790236	CHIP RESISTOR 150KOHM+-5% 1/16W
R0517	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0518	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0519	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0521	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0522	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0523	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0524	0104724	CHIP RESISTOR 10KOHM+-1% 1/16W
R0525	0104566	CHIP RESISTOR 120KOHM+-1% 1/16W
R0526	0105195	CHIP RESISTOR 3.9KOHM+-0.5% 1/16W
R0527	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0528	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0532	0105196	CHIP RESISTOR 6.8KOHM+-0.5% 1/16W
R0533	0104722	CHIP RESISTOR 5.1KOHM+-1% 1/16W
R0534	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0535	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0537	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R0545	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0546	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0547	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0548	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0599	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0601	0790243	CHIP RESISTOR 470KOHM+-5% 1/16W
R0602	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0604	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0605	0105172	CHIP RESISTOR 1.5MOHM+-5% 1/16W
R0606	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0607	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R0609	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0611	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0612	0790231	CHIP RESISTOR 56KOHM+-5% 1/16W
R0613	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0614	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0615	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0616	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0617	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0619	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R0620	0790239	CHIP RESISTOR 270KOHM+-5% 1/16W
R0621	0790239	CHIP RESISTOR 270KOHM+-5% 1/16W
R0622	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0623	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0624	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0625	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0626	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0627	0790237	CHIP RESISTOR 180KOHM+-5% 1/16W
R0628	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0629	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0630	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0631	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0633	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0634	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R0635	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0636	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0637	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R0638	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R0639	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0642	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0646	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R0647	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0650	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0652	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0653	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0654	0790241	CHIP RESISTOR 330KOHM+-5% 1/16W
R0655	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0656	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0657	0790205	CHIP RESISTOR 680 OHM+-5% 1/16W
R0658	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0659	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0660	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0661	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0662	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0663	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0664	0790237	CHIP RESISTOR 180KOHM+-5% 1/16W
R0665	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0666	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0667	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0668	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0669	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0671	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0672	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R0673	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R0674	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R0675	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0676	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0677	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0680	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R0681	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0682	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R0683	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0687	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R0688	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0689	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0690	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0691	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0692	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R0693	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0694	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0698	0104246	CHIP RESISTER 1.0 OHM+-5% 1/10W
R0699	0104246	CHIP RESISTER 1.0 OHM+-5% 1/10W
R0805	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0806	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0807	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0809	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0810	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R0811	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0812	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0813	0790235	CHIP RESISTOR 120KOHM+-5% 1/16W
R0814	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0815	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0816	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0817	0790235	CHIP RESISTOR 120KOHM+-5% 1/16W
R0818	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0820	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0821	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0826	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0834	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0835	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0836	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0837	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0839	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W(TYPE 81)
R0839	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W(TYPE 80)
R0840	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0843	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0845	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0846	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0847	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0848	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0870	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0871	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0872	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0891	0790019	CHIP RESISTOR 47 OHM+-5% 1/16W
R0893	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0904	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0905	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0906	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0907	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0911	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0912	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0913	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0914	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0915	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0917	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0918	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0919	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0920	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0921	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0922	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0923	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0924	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0925	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0926	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0927	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0928	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0929	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0932	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0933	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0934	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0937	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0941	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0943	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0945	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0947	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0949	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0950	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R0951	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R0952	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0953	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0954	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0955	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0958	0104721	CHIP RESISTOR 100KOHM+-0.5% 1/16W
R0959	0104721	CHIP RESISTOR 100KOHM+-0.5% 1/16W
R0961	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0963	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0966	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0967	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0968	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0974	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0975	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0977	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R0979	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0980	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0983	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0984	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0985	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0987	0104562	CHIP RESISTOR 39KOHM+-1% 1/16W
R0988	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0989	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0990	0104563	CHIP RESISTOR 47KOHM+-1% 1/16W
R0991	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R0992	0104721	CHIP RESISTOR 100KOHM+-0.5% 1/16W
R0994	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0995	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0998	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0999	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R1001	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1002	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1003	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R1004	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1005	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R1006	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1007	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1008	0790019	CHIP RESISTOR 47 OHM+-5% 1/16W
R1013	0790006	CHIP RESISTOR 4.7 OHM+-5% 1/16W
R1014	0790006	CHIP RESISTOR 4.7 OHM+-5% 1/16W
R1101	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1102	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R1103	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R1104	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R1105	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R1106	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1108	0790199	CHIP RESISTOR 270 OHM+-5% 1/16W
R1109	0790199	CHIP RESISTOR 270 OHM+-5% 1/16W
R1110	0790192	CHIP RESISTOR 68 OHM+-5% 1/16W
R1111	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R1114	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1117	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1118	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R1119	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1120	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1123	0790205	CHIP RESISTOR 680 OHM+-5% 1/16W
R1125	0104549	CHIP RESISTOR 5.36KOHM+-1% 1/16W
R1127	0105661	CHIP RESISTOR 4.3KOHM+-1% 1/16W
R1128	0104543	CHIP RESISTOR 68KOHM+-1% 1/16W
R1129	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R1130	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R1131	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R1132	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1133	0104545	CHIP RESISTOR 1.24KOHM+-1% 1/16W
R1134	0104554	CHIP RESISTOR 1KOHM+-1% 1/16W
R1135	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1137	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R1139	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R1141	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R1144	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R1145	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R1149	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R1150	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1151	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R1152	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R1153	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1154	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1155	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1156	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1157	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1158	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1159	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1160	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1161	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R1162	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1163	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R1164	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1170	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1171	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R1172	0104501	CHIP RESISTOR 750 OHM+-1% 1/16W
R1173	0104571	CHIP RESISTOR 3.9KOHM+-1% 1/16W
R1174	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1175	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1176	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1177	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1180	0790242	CHIP RESISTOR 390KOHM+-5% 1/16W
R1181	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1182	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1187	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1188	0103824	CHIP RESISTOR 27 OHM+-5% 0.1W
R1189	0103824	CHIP RESISTOR 27 OHM+-5% 0.1W
R1201	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R1202	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R1203	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R1204	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1205	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R1206	0790238	CHIP RESISTOR 270KOHM+-5% 1/16W
R1207	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1208	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R1209	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1213	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1214	0790201	CHIP RESISTOR 330 OHM+-5% 1/16W
R1215	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1216	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R1217	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1218	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R1219	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R1220	0790241	CHIP RESISTOR 330KOHM+-5% 1/16W
R1221	0790238	CHIP RESISTOR 220KOHM+-5% 1/16W
R1222	0790241	CHIP RESISTOR 330KOHM+-5% 1/16W
R1223	0790238	CHIP RESISTOR 220KOHM+-5% 1/16W
R1224	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1225	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1226	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1230	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1231	0104552	CHIP RESISTOR 6.8KOHM+-1% 1/16W
R1232	0104558	CHIP RESISTOR 5.6KOHM+-1% 1/16W
R1233	0104504	CHIP RESISTOR 56K OHM 1/16W
R1234	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R1235	0790242	CHIP RESISTOR 390KOHM+-5% 1/16W
R1236	0790197	CHIP RESISTOR 180 OHM+-5% 1/16W
R1303	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R1304	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R1307	0790199	CHIP RESISTOR 270 OHM+-5% 1/16W
R1308	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R1309	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R1310	0790231	CHIP RESISTOR 56KOHM+-5% 1/16W
R1311	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R1313	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1314	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1315	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R1316	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R1318	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1319	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1320	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R1321	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R1322	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R1323	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1324	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1338	0104518	CHIP RESISTOR 2.87KOHM+-1% 1/16W
R1341	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R1342	0105685	CHIP RESISTOR 330KOHM+-1% 1/16W
R1343	0105675	CHIP RESISTOR 100KOHM+-1% 1/16W
R1344	0105685	CHIP RESISTOR 330KOHM+-1% 1/16W
R1345	0105675	CHIP RESISTOR 100KOHM+-1% 1/16W
R1346	0105574	CHIP RESISTOR 4.7 OHM+-1% 1/10W
R1347	0105574	CHIP RESISTOR 4.7 OHM+-1% 1/10W
R1401	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R1402	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1403	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1404	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1405	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1406	0103821	CHIP RESISTOR 15 OHM+-5% 0.1W
R1408	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R1409	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R1410	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W
R1411	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1412	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1413	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1414	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1415	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1416	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R1420	0103821	CHIP RESISTOR 15 OHM+-5% 0.1W
R1422	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R1423	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R1424	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W
R1425	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1426	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1427	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1428	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1429	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1430	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R1432	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1433	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R2801	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W(TYPE 81)
R2802	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W(TYPE 81)
R2803	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W(TYPE 81)
R2804	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W(TYPE 81)
R2805	0790071	CHIP RESISTOR 330KOHM+-5% 1/16W(TYPE 81)
R2806	0790021	CHIP RESISTOR 56 OHM+-5% 1/16W(TYPE 81)
R2809	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W(TYPE 81)
R2810	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W(TYPE 81)
R2811	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R2821	5172546	FILTER(TYPE 81)
RT0001	5040107	SEMI VARIABLE 10KOHM
RT0002	5040106	SEMI VARIABLE 4.7KOHM
RT0003	5040108	SEMI VARIABLE
RT0004	5040104	VARIABLE RESISTOR 1KOHM
RT0101	5040104	VARIABLE RESISTOR 1KOHM
RT0102	5040105	VARIABLE RESISTOR 2.2KOHM
RT0202	5040204	VARIABLE RESISTOR 10KOHM
RT0203	5040205	VARIABLE RESISTOR 4.7KOHM
RT0204	5040204	VARIABLE RESISTOR 10KOHM
RT0205	0104164	CHIP RESISTOR 3.3KOHM+-10% 1/8W
RT0206	0104159	CHIP RESISTER 1.5KOHM+-10% 1/8W
RT0207	0104163	CHIP RESISTOR 2.7KOHM+-10% 1/8W
RT0209	5040204	VARIABLE RESISTOR 10KOHM
RT0210	5040201	VARIABLE RESISTOR 470 OHM
RT0211	5040203	VARIABLE RESISTOR 4.7KOHM
RT0212	0104163	CHIP RESISTOR 2.7KOHM+-10% 1/8W
RT0214	5040203	VARIABLE RESISTOR 4.7KOHM
RT0215	5040204	VARIABLE RESISTOR 10KOHM
RT0216	5040205	VARIABLE RESISTOR 4.7KOHM
RT0217	5040204	VARIABLE RESISTOR 10KOHM
RT0351	5040204	VARIABLE RESISTOR 10KOHM
RT0352	5040105	VARIABLE RESISTOR 2.2KOHM
RT0401	5040208	VARIABLE RESISTOR 47KOHM
RT0402	5040208	VARIABLE RESISTOR 47KOHM
RT0404	5040208	VARIABLE RESISTOR 47KOHM
RT0405	5040208	VARIABLE RESISTOR 47KOHM
RT0601	5040162	TRIMMER
RT2801	5040105	VARIABLE RESISTOR 2.2KOHM(TYPE 81)
D0051	5337391	DIODE D1FS4
D0053	5337351	DIODE MA132WK
D0055	5337351	DIODE MA132WK
D0056	5337017	DIODE MA3051M
D0057	5337013	DIODE MA3091M
D0058	5337371	DIODE SB07-03C
D0060	5337013	DIODE MA3091M
D0061	5337013	DIODE MA3091M
D0062	5337013	DIODE MA3091M
D0063	5328664	DIODE MA3082M
D0064	5337013	DIODE MA3091M
D0065	5328664	DIODE MA3082M
D0072	5337371	DIODE SB07-03C
D0101	5337351	DIODE MA132WK
D0103	5337351	DIODE MA132WK
D0181	5337422	DIODE DA221
D0201	5337351	DIODE MA132WK
D0351	5337352	DIODE MA132WA
D0354	5337352	DIODE MA132WA
D0355	5337351	DIODE MA132WK
D0451	5337354	DIODE MA133
D0501	5337391	DIODE D1FS4

SYMBOL-NO	P-NO	DESCRIPTION
D0502	5337351	DIODE MA132WK
D0503	5337371	DIODE SB07-03C
D0603	5337351	DIODE MA132WK
D0902	5337351	DIODE MA132WK
D0903	5337351	DIODE MA132WK
D0904	5337352	DIODE MA132WA
D0908	5337351	DIODE MA132WK
D0909	5337422	DIODE DA221
D0910	5337422	DIODE DA221
D0919	5337351	DIODE MA132WK
D0920	5337351	DIODE MA132WK
D0922	5337351	DIODE MA132WK
D0924	5337351	DIODE MA132WK
D0925	5337351	DIODE MA132WK(TYPE 81)
D0926	5337352	DIODE MA132WA
D0927	5337351	DIODE MA132WK
D1101	5337641	DIODE HSM107S
D1102	5337371	DIODE SB07-03C
D1103	5337351	DIODE MA132WK
D1104	5337601	DIODE HVM17
D1106	5337351	DIODE MA132WK
D1107	5337351	DIODE MA132WK
D1108	5337351	DIODE MA132WK
D1301	5337422	DIODE DA221
D1306	5337422	DIODE DA221
D1307	5337422	DIODE DA221
D1308	5337451	DIODE RB715F
D1402	5337422	DIODE DA221
D1404	5337422	DIODE DA221
D1405	5337351	DIODE MA132WK
D1901	5382221	LED PLT-462T3
D2801	5337102	DIODE MA111(TYPE 81)
D2802	5337102	DIODE MA111(TYPE 81)
D2803	5337361	DIODE SB0505CP(TYPE 81)
IC0001	CK12071R	IC LA9500
IC0002	1351051	IC NJM2107F
IC0051	5363182	IC MPC358G
IC0101	1365291	IC HA118167F
IC0102	1365081	IC M52357VP
IC0201	1366923	IC HA118192AF
IC0202	1366381	IC CXL1506N
IC0203	1359591	IC CXL5508M-T3
IC0204	CK10241	IC MM1024AFF
IC0205	CK10261	IC NJM2235V
IC0206	1352032	IC NJM2249M
IC0351	1351991	IC CXL1203N
IC0401	1365261	IC HA118176F
IC0451	1366501	IC LA7471M
IC0453	1352361	IC NJU4066B
IC0501	1366251	IC TL1464IPT
IC0601	1365221	IC HD49782A
IC0602	CK10111U	IC XR10823CQ
IC0603	1396071	IC LB1881V
IC0604	1366391	IC LB1885MA
IC0605	5300194	IC NJM2902V
IC0606	1366972	IC XRU4S66
IC0901	CK12081U	IC HD6433724C76H
IC0902	1366651	IC BA6417F
IC0903	1352582	IC S-84206F
IC0904	1366612	IC XLU5949AFS
IC0905	1366081	IC HD74HCT125T
IC1101	1366681	IC HA118184F
IC1102	1365392	IC HD49319AF
IC1103	1366693	IC HG51B025TFA
IC1104	CK10211U	IC HG51B139FG1
IC1105	1366731	IC UPD16508GB-2A5
IC1106	CK10233U	IC HD6433378V16F
IC1107	1366951	IC S-2939GIF10G-TF
IC1201	1365191	IC NJM3414M
IC1202	1352651	IC NJM3403AV
IC1203	1359931	IC TC4W66F
IC1301	CK10562U	IC SC78054GC-021-389
IC1302	1366802	IC MPC17A85ZVMEL
IC1303	1366802	IC MPC17A85ZVMEL
IC1308	1366061	IC SN74HCT04ADB
IC1311	1366081	IC HD74HCT125T
IC1402	FU10111	SENSOR ENC-05DA
IC1403	1359931	IC TC4W66F
IC1404	CK10131R	IC XRA4510F
IC1405	FU10112	SENSOR ENC-05DB
IC1406	1359931	IC TC4W66F
IC1407	CK10131R	IC XRA4510F
IC2801	1365491	IC FA7610N(TYPE 81)
Q0001	1323301	TRANSISTOR 2SB1219
Q0002	1323321	TRANSISTOR 2SD2216
Q0008	1323321	TRANSISTOR 2SD2216
Q0051	1323171	TRANSISTOR UN9213
Q0052	1323171	TRANSISTOR UN9213
Q0053	1323172	TRANSISTOR UN9113
Q0054	1323171	TRANSISTOR UN9213
Q0055	CA10202R	TRANSISTOR 2SK2084
Q0056	CA10202R	TRANSISTOR 2SK2084
Q0057	1323321	TRANSISTOR 2SD2216
Q0058	1323171	TRANSISTOR UN9213
Q0059	1323231	TRANSISTOR 2SB1462
Q0060	1323321	TRANSISTOR 2SD2216
Q0061	CA10141R	TRANSISTOR 2SD1733
Q0062	1323231	TRANSISTOR 2SB1462
Q0063	1323321	TRANSISTOR 2SD2216
Q0064	1323321	TRANSISTOR 2SD2216
Q0067	1323252	TRANSISTOR XP4501
Q0068	1323171	TRANSISTOR UN9213
Q0070	CA10211R	TRANSISTOR 2SJ318
Q0071	CA10211R	TRANSISTOR 2SJ318
Q0074	1323321	TRANSISTOR 2SD2216
Q0075	1323321	TRANSISTOR 2SD2216
Q0076	1323171	TRANSISTOR UN9213
Q0077	1323171	TRANSISTOR UN9213
Q0078	1323321	TRANSISTOR 2SD2216
Q0101	CA10121R	TRANSISTOR 2SC4998
Q0102	CA10121R	TRANSISTOR 2SC4998
Q0103	CA10121R	TRANSISTOR 2SC4998
Q0104	CA10121R	TRANSISTOR 2SC4998
Q0105	5326521	TRANSISTOR 2SA1576
Q0106	1323231	TRANSISTOR 2SB1462
Q0107	1323171	TRANSISTOR UN9213
Q0109	1323231	TRANSISTOR 2SB1462
Q0110	1323231	TRANSISTOR 2SB1462
Q0112	1323321	TRANSISTOR 2SD2216
Q0113	1323171	TRANSISTOR UN9213
Q0114	1323321	TRANSISTOR 2SD2216
Q0115	1323171	TRANSISTOR UN9213
Q0118	1323171	TRANSISTOR UN9213
Q0119	1323171	TRANSISTOR UN9213
Q0120	1323231	TRANSISTOR 2SB1462
Q0121	1323171	TRANSISTOR UN9213
Q0122	1323231	TRANSISTOR 2SB1462
Q0128	1323321	TRANSISTOR 2SD2216
Q0129	1323171	TRANSISTOR UN9213
Q0130	1323231	TRANSISTOR 2SB1462

SYMBOL-NO	P-NO	DESCRIPTION
Q0131	1323171	TRANSISTOR UN9213
Q0181	1323171	TRANSISTOR UN9213
Q0201	1323171	TRANSISTOR UN9213
Q0202	1323321	TRANSISTOR 2SD2216
Q0203	1323321	TRANSISTOR 2SD2216
Q0204	1323321	TRANSISTOR 2SD2216
Q0207	1323321	TRANSISTOR 2SD2216
Q0208	1323171	TRANSISTOR UN9213
Q0210	1323171	TRANSISTOR UN9213
Q0211	1323171	TRANSISTOR UN9213
Q0213	1323301	TRANSISTOR 2SB1219
Q0214	1323171	TRANSISTOR UN9213
Q0215	1323231	TRANSISTOR 2SB1462
Q0216	1323231	TRANSISTOR 2SB1462
Q0217	1323231	TRANSISTOR 2SB1462
Q0218	1323321	TRANSISTOR 2SD2216
Q0219	1323231	TRANSISTOR 2SB1462
Q0220	1323171	TRANSISTOR UN9213
Q0222	1323171	TRANSISTOR UN9213
Q0223	1323171	TRANSISTOR UN9213
Q0224	1323231	TRANSISTOR 2SB1462
Q0225	1323231	TRANSISTOR 2SB1462
Q0227	1323171	TRANSISTOR UN9213
Q0228	1323171	TRANSISTOR UN9213
Q0229	1323171	TRANSISTOR UN9213
Q0230	1323171	TRANSISTOR UN9213
Q0231	1323171	TRANSISTOR UN9213
Q0232	1323171	TRANSISTOR UN9213
Q0233	1323171	TRANSISTOR UN9213
Q0234	1323171	TRANSISTOR UN9213
Q0235	1323171	TRANSISTOR UN9213
Q0239	1323171	TRANSISTOR UN9213
Q0240	1323231	TRANSISTOR 2SB1462
Q0241	1323171	TRANSISTOR UN9213
Q0242	1323321	TRANSISTOR 2SD2216
Q0246	1323171	TRANSISTOR UN9213
Q0249	1323171	TRANSISTOR UN9213
Q0250	1323231	TRANSISTOR 2SB1462
Q0251	1323321	TRANSISTOR 2SD2216
Q0254	1323231	TRANSISTOR 2SB1462
Q0255	1323171	TRANSISTOR UN9213
Q0256	1323231	TRANSISTOR 2SB1462
Q0257	1323171	TRANSISTOR UN9213
Q0258	1323171	TRANSISTOR UN9213
Q0262	1323171	TRANSISTOR UN9213
Q0263	1323171	TRANSISTOR UN9213
Q0264	1323321	TRANSISTOR 2SD2216
Q0265	1323171	TRANSISTOR UN9213
Q0266	1323172	TRANSISTOR UN9113
Q0267	1323171	TRANSISTOR UN9213
Q0351	1323171	TRANSISTOR UN9213
Q0352	1323172	TRANSISTOR UN9113
Q0353	1323321	TRANSISTOR 2SD2216
Q0354	1323321	TRANSISTOR 2SD2216
Q0356	1323301	TRANSISTOR 2SB1219
Q0357	1323171	TRANSISTOR UN9213
Q0358	1323171	TRANSISTOR UN9213
Q0359	1323321	TRANSISTOR 2SD2216
Q0361	1323231	TRANSISTOR 2SB1462
Q0362	1323171	TRANSISTOR UN9213
Q0401	1323321	TRANSISTOR 2SD2216
Q0402	1323321	TRANSISTOR 2SD2216
Q0454	1323172	TRANSISTOR UN9113
Q0463	1323172	TRANSISTOR UN9113
Q0464	1323171	TRANSISTOR UN9213
Q0501	5326812	TRANSISTOR 2SB1001
Q0502	1308011	TRANSISTOR MPL1
Q0503	1308011	TRANSISTOR MPL1
Q0504	1308011	TRANSISTOR MPL1
Q0505	1323781	TRANSISTOR 2SK1764
Q0506	1323321	TRANSISTOR 2SD2216
Q0507	1323321	TRANSISTOR 2SD2216
Q0601	1323171	TRANSISTOR UN9213
Q0602	1323171	TRANSISTOR UN9213
Q0891	1323321	TRANSISTOR 2SD2216
Q0892	1323321	TRANSISTOR 2SD2216
Q0901	5326812	TRANSISTOR 2SB1001
Q0902	1323171	TRANSISTOR UN9213
Q0904	1323231	TRANSISTOR 2SB1462
Q0905	1323321	TRANSISTOR 2SD2216
Q0906	1323321	TRANSISTOR 2SD2216
Q0907	1323321	TRANSISTOR 2SD2216
Q0908	1323172	TRANSISTOR UN9113
Q0909	1323231	TRANSISTOR 2SB1462
Q0910	1323321	TRANSISTOR 2SD2216
Q0911	1323171	TRANSISTOR UN9213
Q0913	1323171	TRANSISTOR UN9213
Q0914	1323171	TRANSISTOR UN9213
Q0916	1323231	TRANSISTOR 2SB1462
Q0917	1323171	TRANSISTOR UN9213
Q0920	1323321	TRANSISTOR 2SD2216
Q0921	1323321	TRANSISTOR 2SD2216
Q0922	1323171	TRANSISTOR UN9213
Q0923	1323172	TRANSISTOR UN9113
Q0924	1323172	TRANSISTOR UN9113
Q0925	1323171	TRANSISTOR UN9213
Q1001	5328221	TRANSISTOR 2SC2620-QC
Q1101	1323231	TRANSISTOR 2SB1462
Q1102	1323171	TRANSISTOR UN9213
Q1103	1323081	TRANSISTOR 2SA1036K
Q1105	1323231	TRANSISTOR 2SB1462
Q1106	1323231	TRANSISTOR 2SB1462
Q1107	1323171	TRANSISTOR UN9213
Q1108	1323141	TRANSISTOR 2SC2411K
Q1201	1323253	TRANSISTOR XP4401
Q1202	1323321	TRANSISTOR 2SD2216
Q1401	1323081	TRANSISTOR 2SA1036K
Q1402	1323171	TRANSISTOR UN9213
Q1403	1323171	TRANSISTOR UN9213
Q1404	1323171	TRANSISTOR UN9213
Q1901	1322341	TRANSISTOR PT4810F
Q1902	1330091	IC SPI-345-01-G
Q1903	1330091	IC SPI-345-01-G
Q1904	1322341	TRANSISTOR PT4810F
Q2801	5326871	TRANSISTOR 2SD1624(TYPE 81)
⚠T0501	5148332	TRANSFORMERS
T2801	5148283	COIL(TYPE 81)
TH0001	5340553	THERMISTOR, CHIP
ZD0451	5328664	DIODE MA3082M
ZD0452	5328664	DIODE MA3082M
L0001	0773086	COIL 6.8UH
L0051	BV10151R	COIL
L0052	5172403	FILTER(TYPE 81)
L0101	0773136	CHOKE COIL 220UH+-5%
L0102	0773136	CHOKE COIL 220UH+-5%
L0103	0773136	CHOKE COIL 220UH+-5%
L0104	0773136	CHOKE COIL 220UH+-5%
L0105	0773093	CHOKE COIL, CHIP 68UH+-20%
L0106	0773092	CHOKE COIL 47UH+-10%
L0107	5129255	COIL

SYMBOL-NO	P-NO	DESCRIPTION
L0108	0773136	CHOKE COIL 220UH+-5%
L0109	0773135	CHOKE COIL 180UH+-5%
L0110	0773134	CHOKE COIL 150UH+-5%
L0113	0773167	COIL
L0115	0773134	CHOKE COIL 150UH+-5%
L0116	0773087	CHOKE COIL 10UH+-10%
L0117	0773173	COIL
L0201	0773087	CHOKE COIL 10UH+-10%
L0203	0773013	COIL 8.2KUH
L0204	0773167	COIL
L0205	0773135	CHOKE COIL 180UH+-5%
L0206	0773087	CHOKE COIL 10UH+-10%
L0208	0773133	CHOKE COIL 120UH+-5%
L0209	0773087	CHOKE COIL 10UH+-10%
L0210	0773178	COIL
L0211	0773087	CHOKE COIL 10UH+-10%
L0215	0773087	CHOKE COIL 10UH+-10%
L0216	0773134	CHOKE COIL 150UH+-5%
L0218	0773179	COIL
L0401	0773092	CHOKE COIL 47UH+-10%
L0501	BA10122R	COIL
L0502	5129322	CHOKE COIL
L0503	0773087	CHOKE COIL 10UH+-10%
L0504	0773087	CHOKE COIL 10UH+-10%
L0505	0773087	CHOKE COIL 10UH+-10%
L0507	BA10122R	COIL
L0508	BA10124R	COIL
L0510	BA10124R	COIL
L0512	BA10122R	COIL
L0513	BA10124R	COIL
L0514	0773087	CHOKE COIL 10UH+-10%
L0515	0773087	CHOKE COIL 10UH+-10%
L0516	0773094	CHOKE COIL 100UH+-10%
L0517	0773094	CHOKE COIL 100UH+-10%
L0518	0773087	CHOKE COIL 10UH+-10%
L0602	0773087	CHOKE COIL 10UH+-10%
L0901	0773092	CHOKE COIL 47UH+-10%
L0902	0773087	CHOKE COIL 10UH+-10%
L0903	0773087	CHOKE COIL 10UH+-10%
L0904	0773087	CHOKE COIL 10UH+-10%
L0905	0773169	COIL
L0906	0773092	CHOKE COIL 47UH+-10%
L1101	5172403	FILTER
L1102	0773094	CHOKE COIL 100UH+-10%
L1103	5172403	FILTER
L1104	0773094	CHOKE COIL 100UH+-10%
L1106	0773087	CHOKE COIL 10UH+-10%
L1107	0773087	CHOKE COIL 10UH+-10%
L1301	0773087	CHOKE COIL 10UH+-10%
L1302	0773087	CHOKE COIL 10UH+-10%
L2801	0773087	CHOKE COIL 10UH+-10%
L2802	0773094	CHOKE COIL 100UH+-10%
L2803	0773094	CHOKE COIL 100UH+-10%
L2804	0773092	CHOKE COIL 47UH+-10%
L2805	0773087	CHOKE COIL 10UH+-10%
L2806	BA10125R	COIL
LD0001	CH10521	DIODE DNF318U-1
LD0002	CH10521	DIODE DNF318U-1
LD0891	5382912	DIODE LT1ED53A
X0201	1930212	CRYSTAL
X0601	1930172	CRYSTAL
X0901	1930031	CRYSTAL
X0902	1930221	CRYSTAL
X1101	1930093	CRYSTAL
X1102	1930011	CRYSTAL

SYMBOL-NO	P-NO	DESCRIPTION
CP0201	5172494	FILTER, TRAP
CP0202	5172812	FILTER
CP0203	5172811	FILTER
CP0204	5172654	FILTER, BAND PASS
CP0205	5172734	DELAY LINE
CP0206	5172735	FILTER, LOW PASS
CP0351	5172653	FILTER, BAND PASS
CP0401	5172662	FILTER
CP0402	5172424	FILTER
CP1102	BE10111R	LC FILTER
△BT0001	5761771	BATTERY, BACK UP
△F0001	5723231	FUSE 1.6A
△F0002	5723231	FUSE 1.6A
IR0891	5317391	LED MODULE
JK0181	5695291	SOCKT
PG0001	1830303	CONNECTOR
PG0003	EA10131R	CONNECTOR
PG0004	5666926	MINI PLUG
PG0007	1830115	CONNECTOR
PG0010	1830304	CONNECTOR
PG0101	5668616	SOCKET
PG0451	5669192	MINI PLUG
PG0452	5669193	MINI PLUG
PG0601	5692362	MINI PLUG
PG0602	5669093	PLUG
PG0603	5669103	PLUG
PG0901	5692453	CONNECTOR
PG0904	1830116	CONNECTOR
PG0905	5666924	MINI PLUG
PG0907	5668611	SOCKET
PG1001	1830117	CONNECTOR
PG1101	1830118	CONNECTOR
PG1102	5666924	MINI PLUG
PG1301	5669104	PLUG
PG2801	5669193	MINI PLUG(TYPE 80)
PG2801	5669196	PLUG(TYPE 81)
S0001	5635601	SWITCH
S0901	1742011	SWITCH
S1901	5635461	SWITCH
S1902	5636111	SWITCH

EVF SECTION(TYPE 80)

C2001	0806169	ELECTROLYTIC 47UF 16V
C2002	0806169	ELECTROLYTIC 47UF 16V
C2003	0806146	ELECTROLYTIC 2.2UF 50V
C2004	0268437	POLYPROPYLENE 4700PF+-5%100V
C2005	0256871	ELECTROLYTIC 47UF 25V
C2006	0249655	CERAMIC CHIP 1000PF+-10% 1000V
C2007	0249656	CERAMIC CHIP 1000PF+-10% 500V
C2008	0806146	ELECTROLYTIC 2.2UF 50V
C2009	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2011	0209852	CERAMIC CHIP 180PF+-5% 50V
C2012	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2013	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2014	0268521	MYLAR 0.1UF+-10% 50V
C2015	0202151	CERAMIC CHIP 2200PF+-5% 50V
C2016	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C2017	0806145	ELECTROLYTIC 1UF 50V
C2018	0893062	CERAMIC CHIP 1UF+80-20% 16V
R2001	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R2002	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R2003	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R2004	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2005	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R2006	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R2007	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2008	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2009	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R2011	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R2012	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R2013	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R2014	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R2015	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R2016	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1W
R2017	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R2018	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R2019	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R2020	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R2021	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R2022	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R2024	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2025	0103874	CHIP RESISTOR 390KOHM+-5% 0.1W
R2026	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R2027	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
RT2001	5035204	SEMI VARIABLE 2.2MOHM
RT2002	5030251	SEMI VARIABLE 1MOHM
RT2003	5040103	SEMI VARIABLE 470 OHM
D2001	5337133	DIODE MA141K
D2002	5337321	DIODE MA199
IC2001	1365881	IC HA118179F
Q2001	5323831	TRANSISTOR 2SD974
Q2002	5326682	TRANSISTOR XN1B301
△T2001	5240566	TRANSFORMER
△TF2001	5721352	FUSE
L2001	0773003	COIL 47UH
L2002	5244017	COIL
△CS2001	5887003	SOCKET, CRT
PG2001	5669631	CONNECTOR
PG2002	5668469	PLUG

CRD SECTION(TYPE 81)

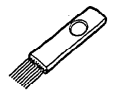
C2101	0202023	CERAMIC CHIP 1000PF+-2% 50V
C2102	0893062	CERAMIC CHIP 1UF+80-20% 16V
C2103	0202023	CERAMIC CHIP 1000PF+-2% 50V
C2104	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2201	0206671	ELECTROLYTIC 10UF 10V
C2202	0893062	CERAMIC CHIP 1UF+80-20% 16V
C2203	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2204	0893062	CERAMIC CHIP 1UF+80-20% 16V
C2205	0893191	CERAMIC CHIP 6800PF+-10% 25V
C2206	0806018	ELECTROLYTIC 2.2UF 6.3V
C2207	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2208	0806036	ELECTROLYTIC 10UF 4V
C2209	0893173	CERAMIC CHIP 680PF+-5% 50V
C2210	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2211	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2212	0893123	CERAMIC CHIP 56PF+-5% 50V
C2213	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C2214	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C2215	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2216	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2217	0893111	CERAMIC CHIP 8PF+-0.5% 50V
C2219	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2220	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C2222	0893224	CERAMIC CHIP 0.068UF+80-20% 16V
C2223	0893224	CERAMIC CHIP 0.068UF+80-20% 16V
C2224	0893224	CERAMIC CHIP 0.068UF+80-20% 16V
C2225	0893215	CERAMIC CHIP 3300PF+-10% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C2226	0806023	ELECTROLYTIC 3.3UF 4V
C2227	0893208	CERAMIC CHIP 1000PF+-10% 50V
C2228	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2229	0893126	CERAMIC CHIP 100PF+-5% 50V
C2230	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2231	0206592	ELECTROLYTIC 10UF 16V
C2232	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2233	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2234	5172541	FILTER
C2235	5172541	FILTER
C2236	0893062	CERAMIC CHIP 1UF+80-20% 16V
C2237	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2238	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2239	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2240	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2241	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2242	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2243	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2244	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2281	0254323	ELECTROLYTIC 47UF 10V
C2282	0206592	ELECTROLYTIC 10UF 16V
C2283	0206592	ELECTROLYTIC 10UF 16V
R2101	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R2102	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R2103	0104569	CHIP RESISTER 20KOHM+-0.1% 1/16W
R2104	0104567	CHIP RESISTER 150KOHM+-0.1% 1/16W
R2105	0790069	CHIP RESISTOR 0.27MOHM+-5% 1/16W
R2106	0104543	CHIP RESISTOR 68KOHM+-1% 1/16W
R2107	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R2108	0104577	CHIP RESISTOR 8.2KOHM+-1% 1/16W
R2201	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R2202	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R2203	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R2204	0105203	CHIP RESISTOR 18KOHM+-0.5% 1/16W
R2205	0790074	CHIP RESISTOR 560KOHM+-5% 1/16W
R2206	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W
R2207	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R2208	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R2209	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R2212	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R2213	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R2214	0104266	CHIP RESISTOR 10MOHM+-5% 1/10W
R2215	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R2216	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R2218	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R2219	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R2220	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R2221	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R2222	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R2223	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R2224	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R2225	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R2226	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R2227	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R2228	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R2229	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R2233	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R2234	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R2235	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R2236	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R2237	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R2239	0790029	CHIP RESISTOR 270 OHM+-5% 1/16W
R2240	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R2242	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R2245	0790063	CHIP RESISTOR 82KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
R2248	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W			
RT2201	5040109	SEMI VARIABLE 47KOHM			
RT2202	5040109	SEMI VARIABLE 47KOHM			
RT2204	5040109	SEMI VARIABLE 47KOHM			
RT2205	5040109	SEMI VARIABLE 47KOHM			
RT2206	5040109	SEMI VARIABLE 47KOHM			
RT2207	5040111	SEMI VARIABLE 100KOHM			
RT2210	5040109	SEMI VARIABLE 47KOHM			
D2201	5337461	DIODE HVU300A			
IC2101	1354481	IC BA226F			
IC2201	CK10571U	IC CXA1785R			
IC2202	CK10161	IC CXD2403R			
Q2101	1323271	TRANSISTOR DTC144EE			
L2202	0773117	CHOKE COIL 8.2UH+-5%			
L2203	5172403	FILTER			
L2204	0773087	CHOKE COIL 10UH+-10%			
L2205	0773087	CHOKE COIL 10UH+-10%			
L2281	0773095	COIL			
L2282	0773087	CHOKE COIL 10UH+-10%			
L2283	0773087	CHOKE COIL 10UH+-10%			
X2201	BL10112R	CRYSTAL			
CP2201	5172475	FILTER			
CP2202	5130672	COIL			
*PG2101	5669099	PLUG			
*PG2102	1830115	CONNECTOR			
PG2201	1830021	CONNECTOR			
PG2202	1830191	PLUG			
PG2203	1830116	CONNECTOR			

Accessories Supplied

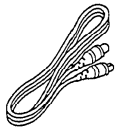
803



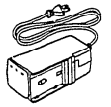
804

805

806

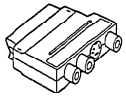


⚠ 807 (VM-ACL1E)

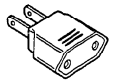


808 (VM-RME55A)

809



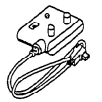
810



811

812

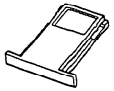
813



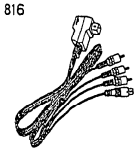
[Only for AU]

814

815



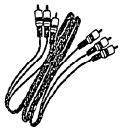
816



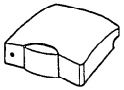
819

820 (VM-RM70EDE)

822

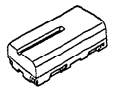


823 (VM-IR80E)

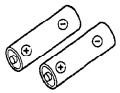


824

⚠



⚠



⚠

WARNING : Keep this battery away from children. If swallowed, consult a physician immediately for emergency treatment.

CHAPTER 8

HOW TO CHECK USING THE SELF-DIAGNOSIS FUNCTIONS

1. Self-Diagnosis is Functions

This camcorder has the following self-diagnosis functions which are engaged by the system control microprocessor (IC901) that detects, stores in memory and displays data related to defects in the mechanical block control system.

- A mode (occasional defect self-diagnosis function)
- B mode (mechanical block self-diagnosis function)

1) Self-diagnosis coverage

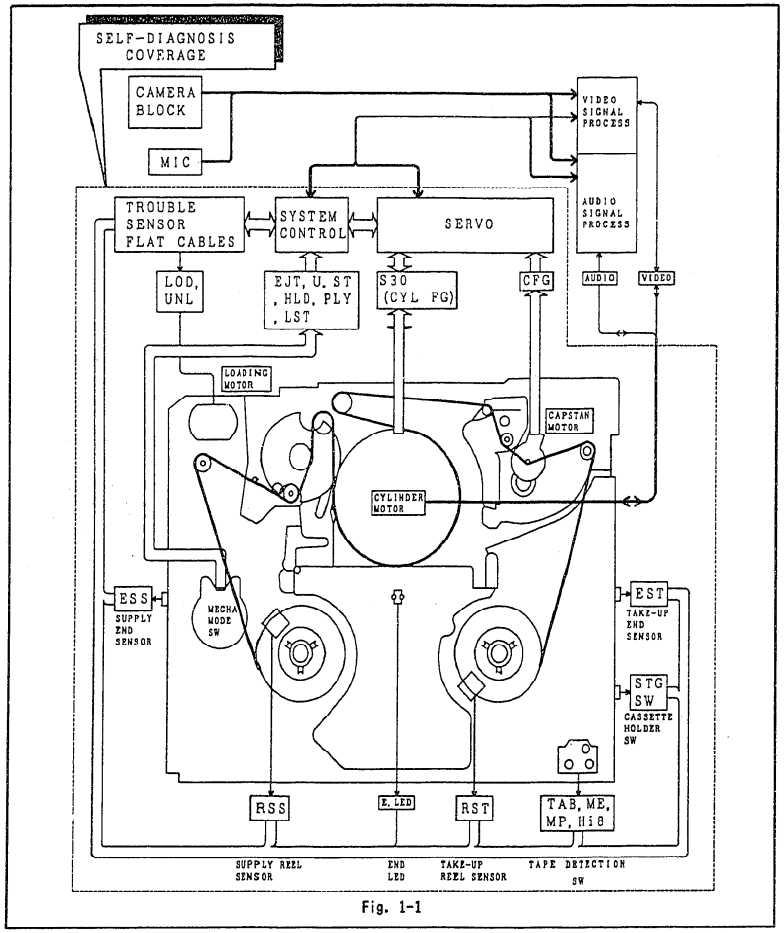


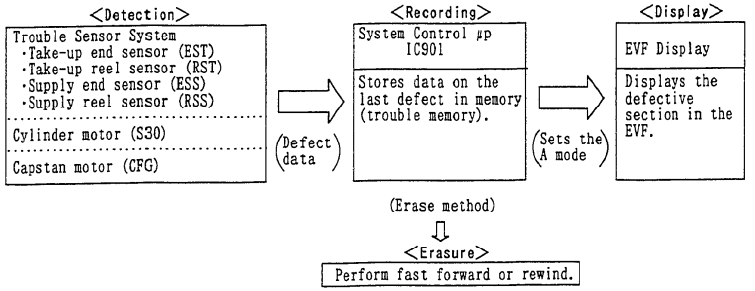
Fig. 1-1

ENGLISH

2. A Mode (Occasional Defect Self-Diagnosis Function)

1) Use
This function can locate defective sections easily when an occasional defect that cannot be reproduced during servicing occurs.

2) Function processes



3) Operation procedure

《Setting method》

Normal mode

⇩

① Connect the power supply.

⇩

② Turn the power switch on.

⇩

③ Press the DATE button and release it, then within a half second, press the DATE and REW buttons simultaneously and hold them depressed for one second.

⇩ (Setting)

《Releasing method》

Self-diagnosis mode

⇩

① Press the DATE and REW buttons simultaneously.

⇩ (Release)

Normal mode

Self-diagnosis mode

```
VW11R TEST<V2.0> 94/10/ 5
 LOD      EJT      UNL
 RSS      UST      RST
 ESS      HLD      EST
 CFG      PLY      S30
 TAB      LST      STG
 ME       REC      MP
          0123456789ABCDEF
FD90  H : 000000000000f000
      L : 088000000000E040
PAL/PAL
```

《Display》

<Results of self-diagnosis>
- Some of the shaded indicators (RSS, RST, ESS, EST, S30, CFG) flash to indicate the defective section. Refer to Fig. 2-1 for details of the diagnosis.

<Cautions during diagnosis>
- Do not press any buttons other than that specified during the self-diagnosis mode. It could cause a malfunction.
- The indicators other than those shaded are not concerned with the self-diagnosis function.

4) Details of A-mode self-diagnosis

The following table summarizes the details of diagnosis for each item and the parts and circuits that could be defective.

Part	Display	Details of diagnosis	Parts and circuits that could be defective
Trouble sensors	RSS	The pulses from the supply reel sensor are incorrect.	·Supply reel disk ·Subchassis ·Trouble sensor (reel sensor) ·IC901
	RST	The pulses from the take-up reel sensor are incorrect.	·Take-up reel disk ·Subchassis ·Trouble sensor (reel sensor) ·IC901
	ESS	The signal from the supply end sensor is incorrect.	·Trouble sensor (supply end sensor, end LED) ·Fuse ·IC901 ·DC-DC converter
	EST	The signal from the take-up end sensor is incorrect.	·Trouble sensor (take-up end sensor, end LED) ·Fuse ·IC901 ·DC-DC converter
Cylinder motor	S30	The SW30 pulse is incorrect.	·Cylinder motor ·IC604 ·IC601 ·IC605 ·IC901 ·DC-DC converter
Capstan motor	CFG	The CPAST. FG pulse is incorrect.	·Capstan motor ·IC604 ·IC601 ·IC605 ·IC901 ·DC-DC converter

3. B Mode (Mechanical Block Self-Diagnosis Function)

1) Use

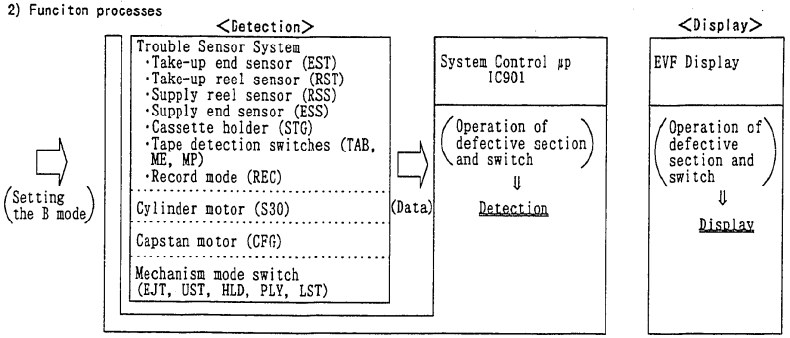
This function can locate defective sections easily when a defect occurs in the mechanical block.

— NOTE —

Engage the B-mode self-diagnosis after performing the A mode.

If the B-mode self-diagnosis is engaged first, the data obtained in the A mode may be erased.

2) Funciton processes



3) Operation procedure

<Setting method>

Normal mode

① Connect the power supply.

② Press the EJECT button to set the camcorder to the eject state.

③ Press the Hi8 MP switch and DATE button and hold them, then turn the power switch on. (Hold the Hi8 MP switch and DATE button depressed for approx. one second after the power has been turned on.)

④ Close the cassette lid within 3 seconds after the power has been turned on.

⇩ (Setting)

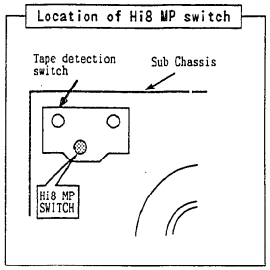
<Releasing method>

Self-diagnosis mode

① Perform one of the following procedures.
- Press the REW button (only in the VCR mode).
- Close the cassette lid.
- Turn the power off.

⇩ (Release)

Normal mode



Self-diagnosis mode

```
VM11R TEST<V2.0> 94/10/05
   LOD        EJT        UNL
   RSS        UST        RST
   ESS        HLD        EST
   CFG        PLY        S3D
   TAB        LST        STG
   ME         REC        MP
⊏⊐        0123456789ABCDEF
FD90   H : 000000000000f000
       L : 088000000000E040
PAL/PAL
```

<Display>

<Results of self-diagnosis>
- ▨ Some of the shaded indicators (RSS, RST, ESS, EST, S30, CFG) flash to indicate the defective section.
- Refer to Table. 3-1 for details of the diagnosis.
- ▩ The indicators with light shading show the switches. When the switches are pressed, the indicators light, and when they are not pressed, the indicators keep on flashing.

<Cautions during diagnosis>
- Do not press any buttons other than the specified during the self-diagnosis mode. It could cause a malfunction.
- ▨·▩ The indicators other than those shaded are not concerned with the self-diagnosis function.

4) Details of B-mode self-diagnosis

The following table summarizes the details of diagnosis for each item and the parts and circuits that could be defective.

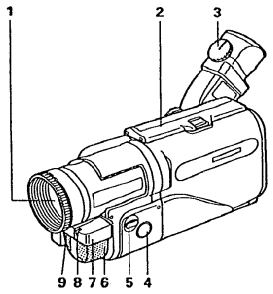
Table.3-1 (1/2)

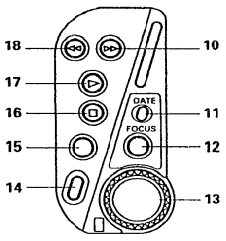
Part	Display	Details of diagnosis: Fault codition	Parts and circuits that could be defective
Trouble sensors	LOD	·The loading motor is defective when running forward. ·Does not load within 10 seconds.	·Loading motor ·Trouble sensors ·IC901 ·IC902 ·DC-DC converter
	UNL	·The loading motor is defective when running in reverse. ·Does not unload within 10 seconds.	
	RSS	·The pulses from the supply reel sensor are incorrect. ·There is one or less pulse within half a second.	·Supply reel disk ·Subchassis ·Trouble sensor (reel sensor) ·IC901
	RST	·The pulses from the take-up reel sensor are incorrect. ·There is one or less pulse within half a second.	·Take-up reel disk ·Subchassis ·Trouble sensor (reel sensor) ·IC901
	ESS	·The signal from the supply end sensor is incorrect. ·There are 4 or less pulses within half a second.	·Trouble sensors (supply end sensor, end LED) ·Fuse ·IC901 ·DC-DC converter
	EST	·The signal from the take-up end sensor is incorrect. ·There are 4 or less pulses within half a second.	·Trouble sensors (take-up end sensor, end LED) ·Fuse ·IC901 ·DC-DC converter
Switches	TAB	·The erase prevention tab detection switch detects the record inhibit mode.	———
	ME	·The ME/MP tape detection switch detects MP tape.	
	MP	·The Hi8 MP switch detects normal MP tape.	
	STG	·The cassette holder switch detects the holder open state.	
	REC	·The record mode switch detects HOLD TO REC.	
Capstan motor	CFG	·The CAPST. FG pulses are incorrect. ·There are 64 or less pulses within 0.1 second.	·Capstan motor ·IC604 ·IC601 ·IC605 ·IC901 ·DC-DC converter
Cylinder motor	S30	·The SW30 pulses are incorrect. ·There are 10 or less pulses within a half second.	·Cylinder motor ·IC604 ·IC601 ·IC605 ·IC901 ·DC-DC converter

Table.3-1 (2/2)

Part	Display	Details of diagnosis: Fault codition	Parts and circuits that could be defective
Mechanism state switch	EJT	·The eject position detection signal is incorrect. ·The eject position is not reached within 3 seconds.	·Mechanism mode switch ·IC901
	UST	·The unloading stop position detection signal is incorrect. ·The unloading stop position is not reached within 3 seconds.	·Loading gears 1,2,3 ·Supply guide roller rail ·Loading ring ·Supply guide roller
	HLD	·The loading position is not reached within 3 seconds. ·The loading position is not reached within 3 seconds.	·Mechanism mode switch ·Loading motor ·Trouble sensors ·DC-DC converter ·IC902 ·IC901
	PLY	·The play position detection signal is incorrect. ·The play position is not reached within 3 seconds.	·Loading gears 1,2,3 ·Supply guide roller rail ·Loading ring ·Supply guide roller ·Impedance roller ·Mechanism mode switch ·IC901
	LST	·The loading stop position detection signal is incorrect. ·The loading stop position is not reached within 3 seconds.	

CONTROLS AND FUNCTIONS





1. Lens
F1.3 (5 - 60mm) X12 power zoom lens features with auto focus and auto iris functions.

2. Buckle
Lock the buckle to close the case tightly before recording so that no water droplets or sand can get inside.

3. Diopter Control
To use the electronic viewfinder, turn this control for your optimum focus adjustment.

4. FADE Button
During recording you can add a professional touch to your recordings by fading in and out of the scenes. You can select the three fade modes — the white fade, wipe fade and zoom fade.

5. EIS (Electronic Image Stabilizer) Button
Press to display " " in the viewfinder. EIS corrects slight shaking of the image to be recorded.

6. Stereo Microphone
Sensitive to sounds coming from the direction in which the camera is pointed.

7. Infrared Ray Receiving Section
Receives infrared rays from the remote control unit.

8. Record/In-Camera Battery Charge Indicator
This indicator lights (red) during recording and lights (green) when the battery inside the camera/recorder is being charged.

9. AV Signal Transmitter
This transmits the AV Signals played back by the camera/recorder to the AV optical receiver.

10. F.FWD Button
Press this button during stop or rewind mode, and fast-forwarding starts. Press the button during playback of tape, and the tape is played back in the forward direction approximately 7 times faster than the normal speed to confirm the recorded content. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement. Also use F.FWD button when setting the date/time.
NOTE: You can also visually scan forward when the camera/recorder is in record/pause (stand-by) mode by pressing and holding this button.

11. DATE Button
Press this button to display the date and time in the viewfinder. Whenever the date and time appear in the viewfinder, they will be recorded on the tape.

12. FOCUS Select Button
Press this button to switch between automatic and manual focusing.
If this button is pressed and "FOCUS" appears in the viewfinder, the camera/recorder enters the manual focus mode. When "FOCUS" is not displayed, focusing is automatic.

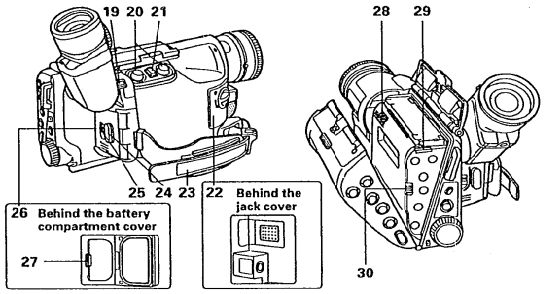
13. Focus Control
For manual focusing, rotate this control to bring the subject into focus.

14. B.LIGHT Button
When the subject is lit from behind, press and hold this button to compensate for the back-lighting.

15. 16x9 Button
With this button the picture format can be switched from 4:3 (picture format of a normal TV set) to 16:9.

16. STOP Button
The STOP button is used to stop playback, rewind, and fast forward operations. The STOP button has no effect during record operation. Also use STOP button when setting the date/time.

17. PLAY Button
Used for playback of tape.
NOTE: When the camera/recorder is in record/pause (stand-by) mode, pressing and holding this button will play the tape at normal.



18. REW Button
Press this button during stop or fast forward mode, and fast-rewinding starts. Press the button during playback of tape, and the tape is played back in the rewind direction approximately 5 times faster than the normal speed to confirm the recorded contents. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement. Also use this button to review the last few seconds of the tape you are recording. Use REW button when setting the date/time.
NOTE: You can also visually scan backward when the camera/recorder is in record/pause (stand-by) mode by pressing and holding this button.

19. Operate Switch
This turns the camera/recorder on and off and also switches between the camera and VCR modes.
Set the switch to "CAM" to turn the camera's power on and to "VIDEO" to turn the VCR's power on.
Press and hold the small red button in the switch to switch it.

20. Power Zoom Switch
This switch performs zooming electrically.
"W": Picture becomes wider gradually.
"T": Picture becomes telescopic gradually.
NOTE: Pressing the power zoom switch strongly results in rapid zooming and pressing it lightly results in slow zooming.

21. INST. ZOOM (Instant Zoom) Button
Use this button to magnify the image being recorded 1.5 times momentarily.

22. AV OUT Jack/EXT MIC Jack or Remote Jack (Behind the jack cover)
"AV OUT" Jack: Use the stereo output cable (provided) or RF output adapter (optional) to connect this jack to a TV to view the pictures played back by the camera/recorder.
"EXT MIC" Jack or Remote Jack: Connect an external microphone (not supplied) here to record sound from the external microphone. Also connect the edit remote control (provided) here.
NOTES:
- Connecting an external microphone automatically switches off the built-in microphone.
- If you use a monaural microphone, the sound is recorded only on the left channel.
- Disconnect the external microphone from the camera/recorder when you are not using it.

23. Hand Strap
Adjust to best fit to your hand. (Refer to page 10)

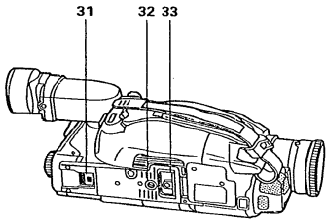
24. Start/Stop Button
This button is used to control the camera/recorder. When the record mode select switch is in the "START/STOP" position, pressing this button in the record pause (standby) mode runs the tape to start recording. When the button is pressed again, the tape stops and the camera/recorder enters the record pause mode.
When the record mode select switch is set to "HOLD TO REC", the camera/recorder records while the Start/Stop button is held depressed and it enters the record pause mode when the button is released.
The Start/Stop button may also be used to display a still picture during the playback mode.

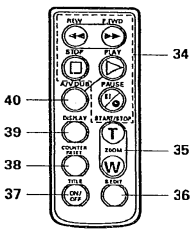
25. BATT EJECT (Battery Eject) Lever
Slide this lever to open the battery compartment lid when loading a battery and removing it.

26. Battery Loading Compartment
Load the battery (provided) here.

27. Battery Release Lever (blue)
Press this lever to remove the battery from the camera/recorder.

CONTROLS AND FUNCTIONS





28. Cassette Holder
Press EJECT button to open the cassette holder. Be aware of the cassette direction when inserting.
NOTE: Power source must be connected to open the cassette holder.

29. EJECT Button
Operates with Operate switch either on or off, if a power source is connected to the camera/recorder.

30. Record Mode Select Switch
"START/STOP": Pressing the Start/Stop button alternates between recording and recording pause.
"HOLD TO REC": The camera/recorder is set to recording while the Start/Stop button is held depressed and it enters recording pause when the button is released.

31. External Power Cord Attachment Section
Attach the external power cord (provided) here.

32. Tripod Mount Screw
Use this screw to mount the camera/recorder on a tripod (generally available).

33. Stand
Lift the fitting for a simple stand.

34. Camera/Recorder Control Buttons
These shaded buttons on the remote control function the same as those on the camera/recorder.

35. Zoom Switch
This switch performs zooming electrically.
"W": Picture becomes wider gradually.
"T": Picture becomes telescopic gradually.
NOTE: The zoom switch on the remote control cannot change the zoom speed, but provides only low-speed zooming.

36. S. EDIT (Synchro Edit) Button (only on the remote control)
Use this button to activate the synchro edit function for dubbing.

37. TITLE ON/OFF Button (only on the remote control)
Use this button to store a title in memory or recall the stored title and record it superimposed on the picture being shot.

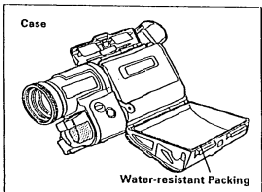
38. COUNTER RESET Button (only on the remote control)
Press this button to reset the linear time counter in the viewfinder to "0:00:00".

39. DISPLAY Button (only on the remote control)
Use this button to select the display in the viewfinder.

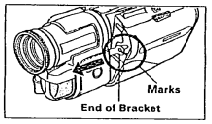
40. A/V DUB Button (only on the remote control)
This button is used to record new audio and video in place of existing audio and video.

WATER-RESISTANT

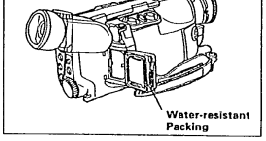
■ Water-resistant structure
Your camera/recorder uses three packings as shown below to provide a water-resistant structure.

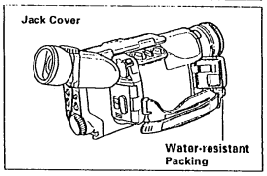


- **To check the packing**



1. Open the case so the end of the bracket is positioned as shown in the figure and pull the bracket forward to release it.
2. After checking, replace the bracket to its original position.





CAUTION

■ How to handle the water-resistant packings
- Inspect the water-resistant packings constantly to check that there are no scratches or chipping as they could cause water to enter.
- Check that no foreign matter adheres to the water-resistant packings before closing the cases. If the camera/recorder is used while dust, sand or thread adheres to only one point of the packings, it could cause water to enter.
- Consult your nearest dealer to replace the packings.

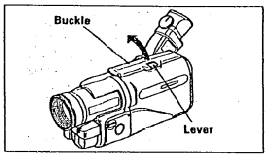
■ The camera/recorder cannot be used in the following places
- Under water
- In a place at high temperature and high humidity such as in a sauna, bathroom, etc.
- Where water would strike it violently (where water pressure is applied)

NOTE: The camera/recorder cannot be used under water because it is not waterproof.

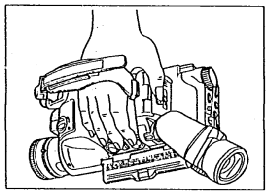
■ Be careful when opening and closing the sections with packing
- The camera/recorder inside the case is not structured to be water-resistant. Take great care that no water droplets enter inside.
- Check that the three sections with packing are closed tightly to ensure that it is water-resistant.

■ **How to open and close the case**

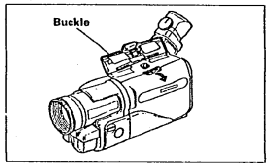
1. Push the lever on the buckle and hold it, then release the buckle in the direction of the arrow.



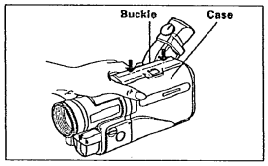
NOTE: After using the camera/recorder, wipe off the sand or water droplets carefully from the case before opening it. Since water droplets or sand may remain under the buckle, release the buckle in the condition shown in the figure and wipe off the water droplets or sand carefully.



2. Open the case in the direction of the arrow.

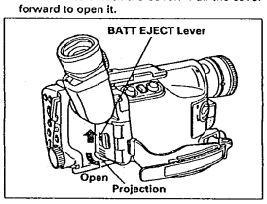


3. To close the case, hold the left and right cases tightly and close the buckle until a click is heard.
NOTE: Lock the case securely using the buckle. Otherwise, it could allow water to enter.

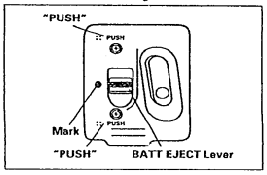


■ **How to open and close the battery compartment cover**

1. Push the BATT EJECT lever in the direction of the arrow to unlock the cover. Pull the cover forward to open it.

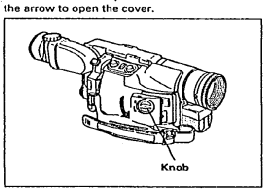


2. To close the battery compartment cover, press both sections marked "PUSH" simultaneously and make sure that a click is heard. Also check that the BATT EJECT lever is aligned with the mark as shown in the figure below.

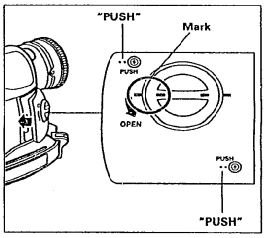


■ **How to open and close the jack cover**

Turn the knob on the jack cover in the direction of the arrow to open the cover.



To close the jack cover, press the two sections marked "PUSH" and make sure that a click is heard. Also check that the knob is aligned with the mark as shown in the figure below.

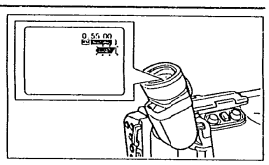


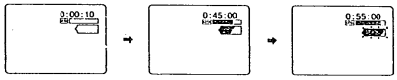
■ **To prevent condensation**

- When the camera/recorder is moved from a cold place to a warm place, leave it for a while until it reaches the ambient temperature before opening the case.
- Be careful that no water droplets or snow flakes enter when opening the case. If they enter, the humidity inside rises and condensation is likely to occur.
- Moisture also condenses on the lens. If moisture condenses on the lens, clear pictures cannot be recorded.
- Dry the camera/recorder with the case open and use it after condensation on the lens disappears.
- Open the case if there is condensation. Otherwise, it is hard to dry the camera/recorder.

CHECKING THE BATTERY PACK

When the " ▬ " indication in the electronic viewfinder appears and flashes while the video camera/recorder is operated with the battery pack (provided), it indicates that the battery charge is insufficient. Charge it or replace it with a charged battery pack.
NOTE: When the camera/recorder is turned on, the battery level indicator " ▭ " is displayed in the viewfinder indicating the condition of camera/recording battery. When the battery is fully charged, " ▭ " is displayed.
After several minutes, the symbol will change to " ▬ ". When the battery is very near empty, the symbol will change to " ▬ " and start blinking. You should find an alternative power source or recharge the battery before continuing to use your camera/recorder.

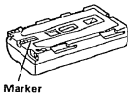




CHARGING THE BATTERY

NOTES:

1. Charge the battery before using it. A battery that is not fully charged can be used according to the time it has been charged.
2. Charge the battery at an ambient temperature of 10℃—30℃.
3. If the usable time of the camera/recorder becomes shorter with a fully charged battery, the life of the battery is ended.
4. Do not short the battery's terminals.
5. Do not disassemble the battery.
6. Do not throw the battery into a fire.
7. If, when a battery is attached to the AC adapter/charger, the CHARGE indicator of the AC adapter/charger flash, remove the battery, then attach it again. If the CHARGE indicator still flashes, there could be a problem with the battery (its service life has been exceeded, etc.). In this case, the battery cannot be charged and you will have to buy a new battery.
8. The battery has a charge check mark. Use this to determine whether it is charged or not. When the battery is unloaded from the camera/recorder, it has no mark, but the battery removed from the AC adapter/charger has a colour mark on it.

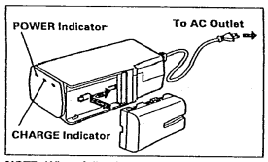


9. Do not use a battery with a crack or any abnormalities in its appearance.

■ **To charge the battery attached to the AC adapter/charger (rapid charging)**

Attach the battery directly to the AC adapter/charger to charge it rapidly.

1. Connect the AC adapter/charger plug to an AC outlet. The POWER indicator lights.
2. Slide the battery in the direction of the arrow as shown in the figure to attach it. Charging the battery will start. The CHARGE indicator on the AC adapter/charger lights during charging and goes out when charging is finished.



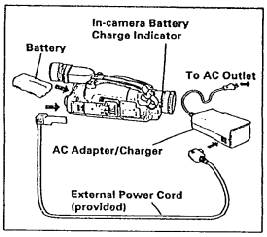
Charging time
The time required for charging the battery is about 2.5 hours.

NOTE: When fully charged, the battery should provide 50-60 minutes of operating time (depending on how much you use zoom and pause).

■ **To charge the battery loaded in the camera/recorder**

You can charge the battery while it is loaded in the camera/recorder after recording is finished, etc. (Load a battery in the camera/recorder. Refer to "POWER SOURCES" on page 15.)

1. Set the Operate switch of the camera/recorder to "OFF".
2. Connect the external power cord plug to the DC OUT jack on the AC adapter/charger.
3. Attach the other end of the external power cord to the installation section at the bottom of the camera/recorder.
4. Connect the AC adapter/charger plug to an AC outlet. The in-camera battery charge indicator lights (green) during charging. When charging is finished, the indicator goes out.



Charging Time
The time required for charging the battery is about 6 hours.

NOTES:

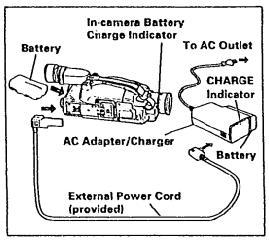
- The CHARGE indicator on the AC adapter/charger does not light.
- Charging is not done when the Operate switch on the camera/recorder is set to "CAM" or "VIDEO".
- When fully charged, the battery should provide 50-60 minutes of operating time (depending on how much you use zoom and pause).
- The camera/recorder becomes warm during charging, but this is normal.
- If the battery is left in the camera/recorder, the battery power will decrease even when the camera/recorder is not used. Do not leave the battery in the camera/recorder after charging it. Be sure to remove it.

ENGLISH

■ To charge two batteries in sequence

You can continuously charge the battery attached to the AC adapter/charger and the battery loaded in the camera/recorder.

1. Set the Operate switch of the camera/ recordor to "OFF".
2. Load a battery inside the camera/recorder.
3. Connect the external power cord plug to the DC OUT jack on the AC adapter/charger.
4. Attach the other end of the external power cord to the installation section at the bottom of the camera/recorder.
5. Attach another battery to the AC adapter/ charger.
6. Connect the AC adapter/charger plug to an AC outlet.
   Charging the battery attached to the AC adapter/charger starts first. The CHARGE indicator on the AC adapter/charger lights during charging and goes out when charging is finished.
   Charging the battery inside the camera/ recorder then starts. The in-camera battery charge indicator lights during charging and goes out when charging is finished.
   NOTE: Normally the in-camera battery charge indicator also lights when the AC adapter/ charger is plugged into an AC outlet. However, this indicator may not light depending on the charged level of the battery loaded in the camera/recorder.

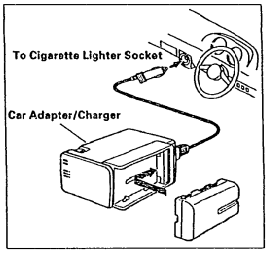


NOTES:
- When fully charged, the battery should provide about 50-60 minutes of operating time (depending on how much you use zoom and pause).
- The camera/recorder becomes warm during charging, but this is normal.

■ To charge the battery attached to the car adapter/charger (optional)

1. Connect the car adapter/charger to the car's cigarette lighter socket. The power indicator lights.
2. Attach the battery to the car adapter/charger. The charge indicator lights and charging starts. The indicator turns off when charging is finished.

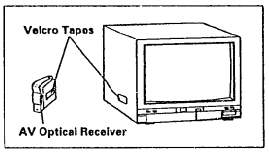
NOTES:
- When the car adapter/charger is connected to the camera/recorder via the external power adapter, set the Operate switch of the camera/recorder to "OFF". Charging is not done when it is set to "CAM" or "VIDEO".
- When fully charged, the battery should provide about 50-60 minutes of operating time (depending on how much you use zoom and pause).
- Read the instruction manual of the car adapter/ charger carefully before charging.



AV OPTICAL LINK (Transmitter:Built into the camera/recorder, Receiver: Optional with VM-H80E, Provided with VM-H81E)

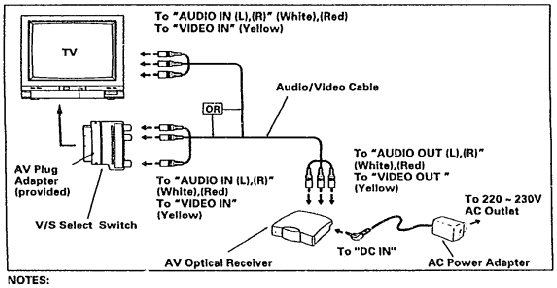
This system converts the signals picked up from the tape into infrared signals and transmits them to the AV optical receiver to play back the picture and sound on a TV which is not physically connected to the camera/recordar. This system cannot be used when the camera/recorder is in the camera mode.

Cautions When Using the AV Optical Receiver
- Be sure not to install the AV optical receiver in a place exposed to direct sunlight or near a heater where the temperature becomes very high, or the receiver could malfunction.
- Do not install the receiver in a unstable place or a place subject to vibrations.
- Use the receiver at normal temperatures (5°C ~ 35°C).
- Take care not to drop the receiver or apply a shock to it.
- Do not leave the optical receiver hanginag in the air.
- If the optical receiver cannot be placed horizontally on the TV, etc., use the Velcro tapes provided to fix it vertically so that it does not fall down. Before pasting on the Velcro tapes, remove dirt from the receiver and the place on which the receiver is to be fixed. When using the Velcro tapes to fix the receiver, fit one side of the receiver onto something.



If any abnormality or trouble occurs:
- If you find any abnormality or trouble, immediately unplug the AC adapter from the AC outlet and consult the video store from whom you purchased the camera/recorder.
- When you go for servicing, take both the AV optical receiver and camera/recorder.

■ CONNECTION


To "AUDIO IN (L),(R)" (White),(Red)
To "VIDEO IN" (Yellow)
TV
Audio/Video Cable
OR
AV Plug Adapter (provided)
To "AUDIO IN (L),(R)" (White),(Red) To "VIDEO IN" (Yellow)
To "AUDIO OUT (L),(R)" (White),(Red) To "VIDEO OUT " (Yellow)
To 220 ~ 230V AC Outlet
V/S Select Switch
To "DC IN"
AV Optical Receiver
AC Power Adapter

NOTES:
- If your TV has the "AUDIO/VIDEO IN" jacks, connect the audio/video cable directly to the TV.
- If your TV has the "SCART" connector, connect the audio/video cable to the AV plug adapter, and then connect the adapter to the SCART connector of your TV.
- When you use the AV plug adapter, set the V/S select switch on the side of the adapter to "V".
- If you TV has a single (mono) audio input, connect either the left or right audio plug to the audio input on the TV.

1. Connect the AV optical receiver to the TV using the audio/video cable as illustrated on page 37.
2. Connect the AC power adapter to the "DC IN" jack of the AV optical receiver.
3. Plug the AC power adapter into an AC outlet. The power lamp of the optical receiver will light (red) to show that the receiver is in the stand-by mode.

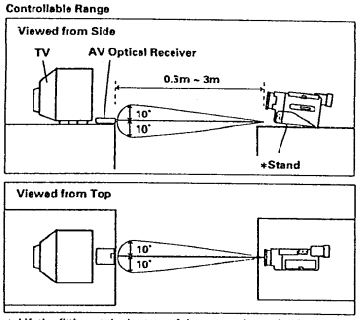
NOTES:
- Use the AC power adapter for the optical receiver with the 220 – 230V AC power supply.
- If you are not going to use the AV optical receiver for a long time, unplug the AC power adapter from the AC outlet.

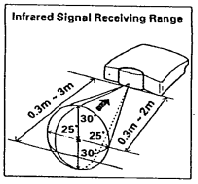
WARNING : Be sure to use the specified AC power adapter with the AV optical receiver. Using other power units could damage the receiver. Be sure not to use the AC power adapter to supply power to an electrical device other than the AV optical receiver, or it could damage the device.

■ OPERATIONS

1. Make sure that the power lamp of the AV optical receiver lights (red) to show that the receiver is in the stand-by mode.
2. Turn the TV on and select video input.
3. Connect a power source to the camera/ recorder and insert a recorded cassette.
4. Set the Operate switch to "VIDEO" and point the camera/recorder's transmitter at the AV optical receiver.
   When the AV optical receiver senses a signal from the camera/recorder, the power lamp of the receiver changes to green to show that the receiver is in the power on mode.
   NOTE: When the Operate switch of the camera/recorder is set to "CAM", no signal can be transmitted.
5. Press the PLAY button. Now, the playback picture appears on the TV screen.
   NOTE: When you use the remote control to operate the camera/recorder, point it at the infrared receiver of the camera/recorder. You cannot operate the camera/recorder by pointing the remote control at the AV optical receiver.
6. When playback is finished, set the Operate switch of the camera/recorder to "OFF". After approx. 20 seconds, the power lamp of the AV optical receiver changes to red to show that the receiver has entered the stand-by mode.

Controllable Range



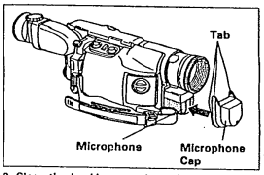


* Lift the fitting at the bottom of the camera/recorder; it can be used as a simple stand.
NOTE: The stand is likely to slip and may fall down even with a slight impact, so be careful when selecting the position where the camera/recorder is to be installed using the stand.

MAINTENANCE AND STORAGE AFTER USE

■ How to maintain

1. Position the microphone cap as shown in the figure and put it on the microphone securely until a click is heard.



2. Close the buckle securely and wipe the case with a cloth moistened with water or wash it with tap water which is flowing gently, to remove foreign matter or salt. (Do not wash the case with water at high pressure. It could cause water to enter.) Use the brush (provided) to wipe off the sand and mud from the clearances of the case, switches, buttons, buckle, etc.
   NOTE: Remove the dirt and dust completely from the terminal section at the bottom using the brush (provided) or a soft cloth.
3. Wipe off the water on the case with a dry cloth.
4. Release the buckle.
   Refer to "How to open and close the case" on page 8.
5. Check that there is no water droplets on the buckle, open the case and dry the camera/ recorder in a dark and well ventilated place.

NOTES:
- Do not dry the camera/recorder forcibly using a drier or heater.
- Never use cleaning chemical such as alcohol, thinner, banzine, etc.
- Do not rub the lens with force. The lens could be scratched.
- Do not lubricate the metal sections.

■ Storage

- Store the camera/recorder in a well ventilated place, not in a place at high temperature and high humidity or in a dusty place.

- Store the camera/recorder without closing the buckle and with the case slightly open.

TROUBLESHOOTING

Symptom	Check Point & Correction
Cassette holder cannot be opened when you press the EJECT button.	Connect the power source.
Cassette cannot be inserted into cassette compartment.	Load cassette in direction indicated by arrow on cassette.
	The cassette window must be towards the outside.
Picture does not appear in the viewfinder.	Remove the lens cap.
	Slide Operate switch to "CAM".
The camera/recorder cannot go into the recording mode, even when Start/Stop button is pressed.	Check the record-protect tab on the cassette. See page 21 for details.
	Set Operate switch to "CAM" position.
	Push the cassette holder embossed PUSH to close it.
	The " " indication in the viewfinder flashes to indicate battery is discharged. Try another battery or charge the battery.
PLAY button cannot be engaged.	Set Operate switch to "VIDEO" position.
Interference on playback picture. (The TV is connected to the camera/recorder using the RF output adapter.)	When you see the playback picture on your TV, adjust fine tuning knob on television set to obtain the best picture.
Picture is out of focus. Auto-focus does not operate correctly.	Press the FOCUS select button to erase "FOCUS" from the viewfinder.
	Auto-Focus does not operate correctly if a special-effects filter is attached or with the objects shown on page 24.
Power is interrupted.	If the record pause mode continues for more than 5 minutes, power is shut off automatically. Press the Start/Stop button to restore the power.
Power is turned on, but no button operations are accepted.	Remove the power source, and after about one minute, push the reset switch (behind the jack cover) gently using a toothpick, etc. until you feel a click. The display will be reset. Then set the information again. (beside the AV out jack)
"TAPE" appears in the viewfinder.	Have you moved the camera/recorder or cassette from a cold place to a warm place so that its temperature changed abruptly? If the temperature has changed, remove the cassette and set the Operate switch to "OFF", then wait for about one hour.
	Remove the cassette and then try to reinsert: remove it several times. If the indication is still shown in the viewfinder, use a cleaning tape to clean the heads and replace the cassette.
Playback volume is low or no sound recorded.	Recording was done with the microphone cap attached.
Sound is heard only from one channel or no sound was recorded.	If water splashes directly on the microphone, no sound may be recorded. Dry the microphone thoroughly and make a trial recording before using the camera/recorder.
	When recording with an external monaural microphone, the sound is recorded only on the left channel. If recording is done with the power of the external microphone turned off, no sound is recorded. Disconnect the external microphone from the camera/recorder when you are not using it.

Symptom	Check Point & Correction
Optical link does not operate. Noise appears in the picture played back via the optical receiver.	If there is any obstacle between the AV optical receiver and camera/recorder or a microphone cap is attached, no signal can be transmitted from the camera/recorder to the AV optical receiver.
	Check the location of the camera/recorder and the position where the AV optical receiver is installed. Refer to pages 37 – 39 for details.

VM-H80E/H81E TK No.6501E Video & Personal Media Systems Division, Tokai Operation

HITACHI

Copyright © Hitachi, Ltd. 1995. All rights reserved.

Printed in Japan (IID)